

STN Columbus

=> file reg

COST IN U.S. DOLLARS

ENTRY	SINCE FILE SESSION	TOTAL
	0.21	0.21

FULL ESTIMATED COST

FILE 'REGISTRY' ENTERED AT 17:49:46 ON 07 MAR 2003

USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.

PLEASE SEE "HELP USAGETERMS" FOR DETAILS.

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Property values tagged with IC are from the ZIC/VINITI data file provided by InfoChem.

STRUCTURE FILE UPDATES: 6 MAR 2003 HIGHEST RN 497140-34-8

DICTIONARY FILE UPDATES: 6 MAR 2003 HIGHEST RN 497140-34-8

TSCA INFORMATION NOW CURRENT THROUGH MAY 20, 2002

Please note that search-term pricing does apply when conducting SmartSELECT searches.

Crossover limits have been increased. See HELP CROSSOVER for details.

Experimental and calculated property data are now available. See HELP PROPERTIES for more information. See STNote 27, Searching Properties in the CAS Registry File, for complete details:

<http://www.cas.org/ONLINE/STN/STNOTES/stnotes27.pdf>

=> s (polymer or copolymer) and (ethylene or ethene)

739017 POLYMER

15849 POLYMERS

748905 POLYMER

(POLYMER OR POLYMERS)

125469 COPOLYMER

257 COPOLYMERS

125602 COPOLYMER

(COPOLYMER OR COPOLYMERS)

88674 ETHYLENE

2 ETHYLENES

88674 ETHYLENE

(ETHYLENE OR ETHYLENES)

85171 ETHENE

L1 58276 (POLYMER OR COPOLYMER) AND (ETHYLENE OR ETHENE)

=> d scan

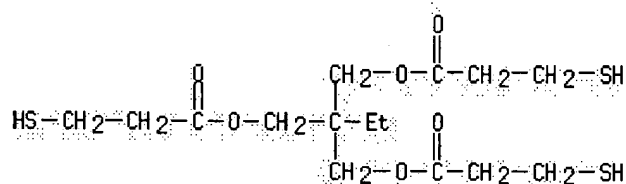
L1 58276 ANSWERS REGISTRY COPYRIGHT 2003 ACS

IN Propanoic acid, 3-mercapto-, 2-ethyl-2-[(3-mercapto-1-oxopropoxy)methyl]-1,3-propanediyl ester, polymer with 1,1'-[oxybis(2,1-ethanedioxy)]bis[ethene] (9CI)

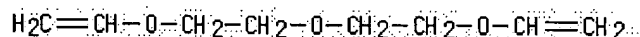
MF (C15 H26 O6 S3 . C8 H14 O3)x

CI PMS

CM 1



CM 2



HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1)1

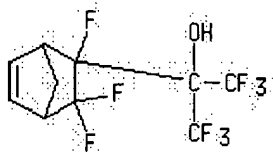
L1 58276 ANSWERS REGISTRY COPYRIGHT 2003 ACS

IN Bicyclo[2.2.1]hept-5-ene-2-carboxylic acid, 2-fluoro-, 1,1-dimethylethyl ester, polymer with tetrafluoroethene and 2,3,3-trifluoro-a,a-bis(trifluoromethyl)bicyclo[2.2.1]hept-2-ene-2-methanol (9CI)

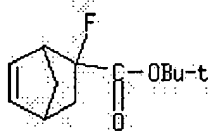
MF (C12 H17 F O2 . C10 H7 F9 O . C2 F4)x

CI PMS

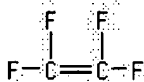
CM 1



CM 2



CM 3



HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1)1

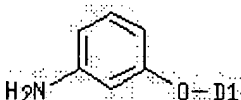
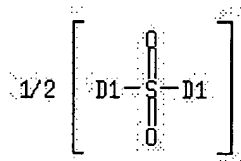
L1 58276 ANSWERS REGISTRY COPYRIGHT 2003 ACS

IN 5-Isobenzofurancarboxylic acid, 1,3-dihydro-1,3-dioxo-, 1,2-ethanediyl ester, polymer with 4,4'-diamino[1,1'-biphenyl]-3,3'-diol, 2,2',2''-[methylidynetris(phenyleneoxymethylene)]tris[oxirane], 4,4'-sulfonylbis[benzenamine] and 3,3'-[sulfonylbis(phenyleneoxy)]bis[benzenamine] (9CI)

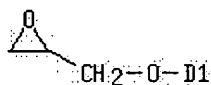
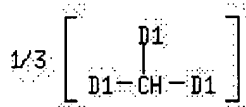
MF (C28 H28 O6 . C24 H20 N2 O4 S . C20 H10 O10 . C12 H12 N2 O2 S . C12 H N2 O2)x

CI PMS

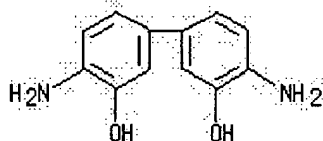
CM 1



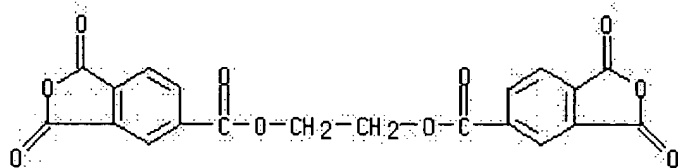
CM 2



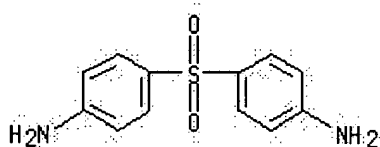
CM 3



CM 4



CM 5



HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1)0

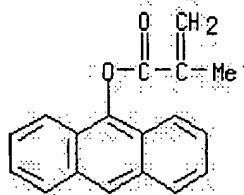
=> s11 and vinyl
 65897 VINYL
 1 VINYL
 65897 VINYL
 (VINYL OR VINYL)
 L2 7536 L1 AND VINYL

=> s12 and silan?
 170377 SILAN?
 L3 394 L2 AND SILAN?

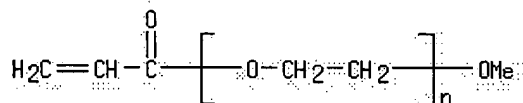
=> d scan

L3 394 ANSWERS REGISTRY COPYRIGHT 2003 ACS
 IN 2-Propenoic acid, 2-methyl-, 2-ethyl-2-[(2-methyl-1-oxo-2-propenyl)oxy)methyl]-1,3-propanediyl ester, polymer with 9-anthracenyl 2-methyl-2-propenoate, ethenyltrimethoxysilane and a-(1-oxo-2-propenyl)-w-methoxypoly(oxy-1,2-ethanediyl) (9CI)
 MF (C18 H26 O6 . C18 H14 O2 . C5 H12 O3 Si . (C2 H4 O)n C4 H6 O2)x
 CI PMS

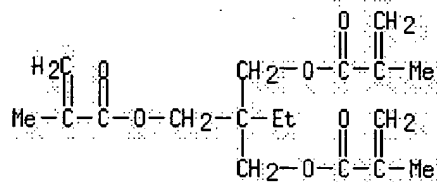
CM 1



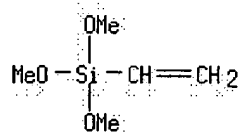
CM 2



CM 3



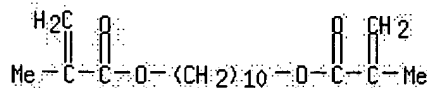
CM 4



HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1)1

L3 394 ANSWERS REGISTRY COPYRIGHT 2003 ACS
 IN 2-Propenoic acid, 2-methyl-, 1,10-decanediyl ester, polymer with ethene, ethenyl acetate, ethenyltrimethoxysilane and 1-propene (9CI)
 MF (C18 H30 O4 . C5 H12 O3 Si . C4 H6 O2 . C3 H6 . C2 H4)x
 CI PMS

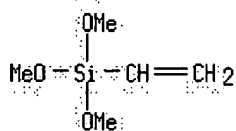
CM 1



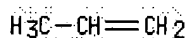
CM 2

STN Columbus

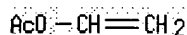
H6 O)n C14 H32 N2 O9 Si2 . C2 Cl F3)x
Cl PMS



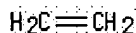
CM 3



CM 4



CM 5



HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1)0

=> s l2 and(ethenyltrimethoxysilane or ethenyltriethoxysilane or ethenyltripropoxysilane or ethenyltributoxysilane)

1065 ETHENYLTRIMETHOXYSILANE

552 ETHENYLTRIETHOXYSILANE

3 ETHENYLTRIPROPOXYSILANE

0 ETHENYLTRIBUTOXYSILANE

L4 175 L2 AND(ETHENYLTRIMETHOXYSILANE OR ETHENYLTRIETHOXYSILANE OR

ETHENYLTRIPROPOXYSILANE OR ETHENYLTRIBUTOXYSILANE)

=> d his

(FILE 'HOME' ENTERED AT 17:49:37 ON 07 MAR 2003)

FILE 'REGISTRY' ENTERED AT 17:49:46 ON 07 MAR 2003

L1 58276 S (POLYMER OR COPOLYMER) AND (ETHYLENE OR ETHENE)

L2 7536 S L1 AND VINYL

L3 394 S L2 AND SILAN?

L4 175 S L2 AND(ETHENYLTRIMETHOXYSILANE OR ETHENYLTRIETHOXYSILANE OR E

=> s l1 and(ethenyltrimethoxysilane or ethenyltriethoxysilane or ethenyltripropoxysilane or ethenyltributoxysilane)

1065 ETHENYLTRIMETHOXYSILANE

552 ETHENYLTRIETHOXYSILANE

3 ETHENYLTRIPROPOXYSILANE

0 ETHENYLTRIBUTOXYSILANE

L5 501 L1 AND(ETHENYLTRIMETHOXYSILANE OR ETHENYLTRIETHOXYSILANE OR

ETHENYLTRIPROPOXYSILANE OR ETHENYLTRIBUTOXYSILANE)

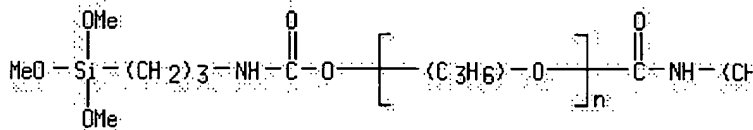
=> d scan l4

L4 175 ANSWERS REGISTRY COPYRIGHT 2003 ACS

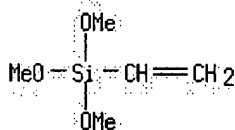
IN Dodecanoic acid, ethenyl ester, polymer with butyl 2-propenoate, chlorotrifluoroethene, ethenyltrimethoxysilane, 2-ethylhexyl 2-propenoate, silicic acid (H4SiO4) tetraethyl ester and a-[[[3-(trimethoxysilyl)propyl]amino]carbonyl]-w-[[[3-(trimethoxysilyl)propyl]amino]carbonyl]oxy]poly[oxy(methyl-1,2-ethanediy)] (9Cl)

MF (C14 H26 O2 . C11 H20 O2 . C8 H20 O4 Si . C7 H12 O2 . C5 H12 O3 Si . (C3

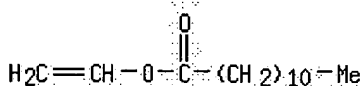
CM 1



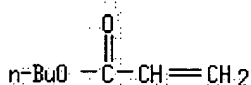
CM 2



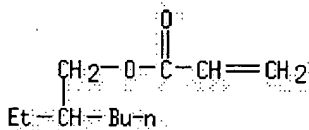
CM 3



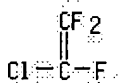
CM 4



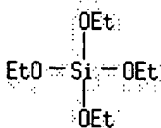
CM 5



CM 6



CM 7

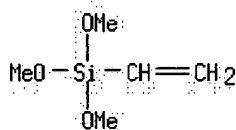


HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1)1

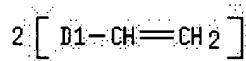
L4 175 ANSWERS REGISTRY COPYRIGHT 2003 ACS

IN 2-Propenoic acid, 2-methyl-, polymer with diethenylbenzene, ethene,
2-(ethenylloxy)propane, ethenyltrimethoxysilane, 1-propene and
2-propenenitrile, block, graft (9CI)MF (C10 H10 . C5 H12 O3 Si . C5 H10 O . C4 H6 O2 . C3 H6 . C3 H3 N . C2 H4)x
CI PMS

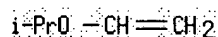
CM 1



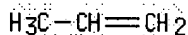
CM 2



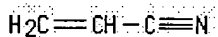
CM 3



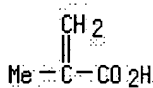
CM 4



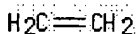
CM 5



CM 6



CM 7

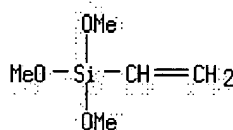


HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1)1

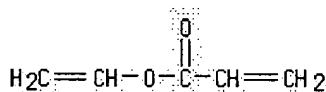
L4 175 ANSWERS REGISTRY COPYRIGHT 2003 ACS

IN 2-Propenoic acid, ethenyl ester, polymer with ethene,
ethenyltrimethoxysilane and methyl 2-propenoate (9CI)MF (C5 H12 O3 Si . C5 H6 O2 . C4 H6 O2 . C2 H4)x
CI PMS

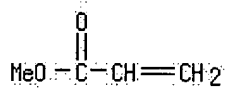
CM 1



CM 2



CM 3



CM 4

HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1)d his
'D HIS' IS NOT VALID HERETo display more answers, enter the number of answers you would like to
see. To end the display, enter "NONE", "N", "0", or "END".

HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1):0

=> s ethene and(ethenyltrimethoxysilane or ethenyltriethoxysilane or
ethenyltripropoxysilane or ethenyltributoxysilane) and (polymer or copolymer)

85171 ETHENE

1065 ETHENYLTRIMETHOXYSILANE

552 ETHENYLTRIETHOXYSILANE

3 ETHENYLTRIPROPOXYSILANE

0 ETHENYLTRIBUTOXYSILANE

739017 POLYMER

15849 POLYMERS

748905 POLYMER

(POLYMER OR POLYMERS)

125469 COPOLYMER

257 COPOLYMERS

125602 COPOLYMER

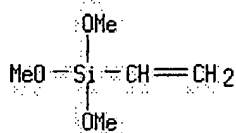
(COPOLYMER OR COPOLYMERS)

L6 486 ETHENE AND(ETHENYLTRIMETHOXYSILANE OR
ETHENYLTRIETHOXYSILANE ORETHENYLTRIPROPOXYSILANE OR ETHENYLTRIBUTOXYSILAN
AND (POLYMER
OR COPOLYMER)

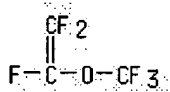
=> d scan

L6 486 ANSWERS REGISTRY COPYRIGHT 2003 ACS
 IN Silane, ethenyltrimethoxy-, polymer with ethoxyethene,
 1,1,2,3,3,3-hexafluoro-1-propene and trifluoro(trifluoromethoxy)ethene
 (9CI)
 MF (C5 H12 O3 Si . C4 H8 O . C3 F6 O . C3 F6)x
 CI PMS

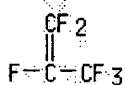
CM 1



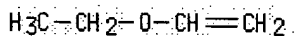
CM 2



CM 3



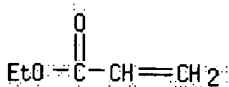
CM 4



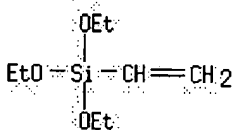
HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1)1

L6 486 ANSWERS REGISTRY COPYRIGHT 2003 ACS
 IN 2-Propenoic acid, ethyl ester, polymer with ethene and
 ethenyltriethoxysilane, graft (9CI)
 MF (C8 H18 O3 Si . C5 H8 O2 . C2 H4)x
 CI PMS

CM 1



CM 2



CM 3



HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1)0

=> s l6 not (trifl? or acid)

793215 TRIFL?

5812826 ACID

7919 ACIDS

5818604 ACID

(ACID OR ACIDS)

L7 125 L6 NOT (TRIFL? OR ACID)

=> d scan

L7 125 ANSWERS REGISTRY COPYRIGHT 2003 ACS

IN Silane, ethenyltrimethoxy-, polymer with CM 2551 and ethene, graft
 (9CI)

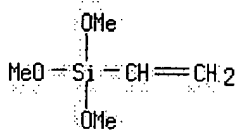
MF (C5 H12 O3 Si . C2 H4 . Unspecified)x

CI PMS

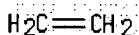
CM 1

STRUCTURE DIAGRAM IS NOT AVAILABLE

CM 2



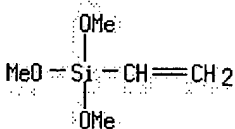
CM 3



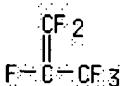
HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1)1

L7 125 ANSWERS REGISTRY COPYRIGHT 2003 ACS
 IN Silane, ethenyltrimethoxy-, polymer with 1,1-difluoroethene,
 ethoxyethene and 1,1,2,3,3,3-hexafluoro-1-propene (9CI)
 MF (C5 H12 O3 Si . C4 H8 O . C3 F6 . C2 H2 F2)x
 CI PMS

CM 1

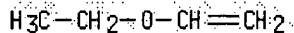


CM 2

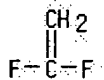


STN Columbus

CM 3



CM 4



HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1)1

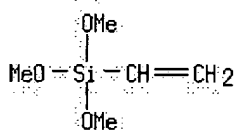
L7 125 ANSWERS REGISTRY COPYRIGHT 2003 ACS

IN Silane, ethenyltrimethoxy-, polymer with 1,1-difluoroethene,
1,1,2,3,3,3-hexafluoro-1-propene and tetrafluoroethene, graft (9CI)

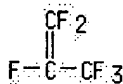
MF (C5 H12 O3 Si . C3 F6 . C2 H2 F2 . C2 F4)x

CI PMS

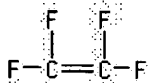
CM 1



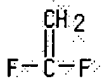
CM 2



CM 3



CM 4



HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1)0

=> s17 not difluor? or hexafluor? or tetrafluor?)

UNMATCHED RIGHT PARENTHESIS 'ETRAFLUOR?'

The number of right parentheses in a query must be equal to the number of left parentheses.

=> s17 not(difluor? or hexafluor? or tetrafluor?)

254822 DIFLUOR?

89526 HEXAFLUOR?

124596 TETRAFLUOR?

L8 86 L7 NOT(DIFLUOR? OR HEXAFLUOR? OR TETRAFLUOR?)

=> d scan

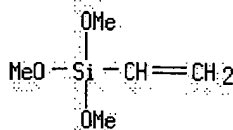
L8 86 ANSWERS REGISTRY COPYRIGHT 2003 ACS

IN Silane, ethenyltrimethoxy-, polymer with ethene and 1-propene, graft (9CI)

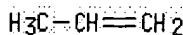
MF (C5 H12 O3 Si . C3 H6 . C2 H4)x

CI PMS

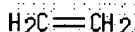
CM 1



CM 2



CM 3



HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1)1

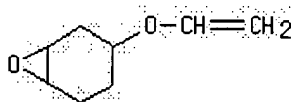
L8 86 ANSWERS REGISTRY COPYRIGHT 2003 ACS

IN Silane, ethenyltrimethoxy-, polymer with 3-(ethenyloxy)-7-oxabicyclo[4.1.0]heptane and ethoxyethene (9CI)

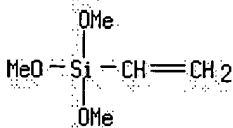
MF (C8 H12 O2 . C5 H12 O3 Si . C4 H8 O)x

CI PMS

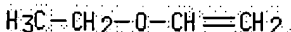
CM 1



CM 2



CM 3



HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1)1

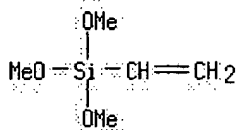
L8 86 ANSWERS REGISTRY COPYRIGHT 2003 ACS

IN 2-Propenenitrile, polymer with 1,3-butadiene, chloroethene and ethenyltrimethoxysilane (9CI)

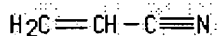
MF (C5 H12 O3 Si . C4 H6 . C3 H3 N . C2 H3 Cl)x

CI PMS

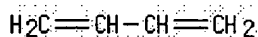
CM 1



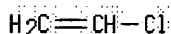
CM 2



CM 3



CM 4



HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1)0

=> s l8 not (chlor? or prop? or butadi? or oxacycl?)

3882201 CHLOR?

4045371 PROP?

51360 BUTADI?

74747 OXACYCL?

L9 48 L8 NOT (CHLOR? OR PROP? OR BUTADI? OR OXACYCL?)

=> d scan

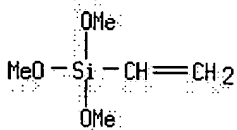
L9 48 ANSWERS REGISTRY COPYRIGHT 2003 ACS

IN Silane, ethenyltrimethoxy-, polymer with ethene and 4-methyl-1-pentene (9CI)

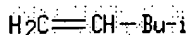
MF (C6 H12 . C5 H12 O3 Si . C2 H4)x

CI PMS

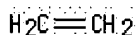
CM 1



CM 2



CM 3



HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1)1

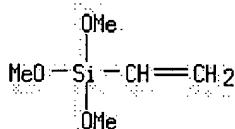
L9 48 ANSWERS REGISTRY COPYRIGHT 2003 ACS

IN 4,7-Methano-1H-indene, 3a,4,7,7a-tetrahydro-, polymer with 1-butene, ethene and ethenyltrimethoxysilane (9CI)

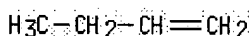
MF (C10 H12 . C5 H12 O3 Si . C4 H8 . C2 H4)x

CI PMS

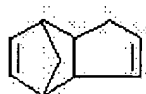
CM 1



CM 2



CM 3



CM 4



HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1)1

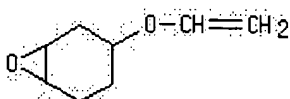
L9 48 ANSWERS REGISTRY COPYRIGHT 2003 ACS

IN Silane, ethenyltrimethoxy-, polymer with 3-(ethenyloxy)-7-oxabicyclo[4.1.0]heptane and ethoxyethene (9CI)

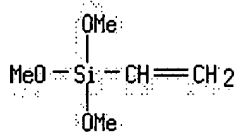
MF (C8 H12 O2 . C5 H12 O3 Si . C4 H8 O)x

CI PMS

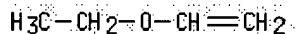
CM 1



CM 2



CM 3



HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1)0

=> s l9 not(oxa? or inden? or pent?)

1015119 OXA?

226981 INDEN?

1702101 PENT?

L10 39 L9 NOT(OXA? OR INDEN? OR PENT?)

=> d scan

L10 39 ANSWERS REGISTRY COPYRIGHT 2003 ACS

IN Silane, ethenyltrimethoxy-, polymer with CM 2551 and ethene, graft (9CI)

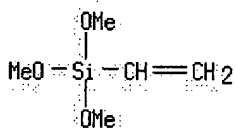
MF (C5 H12 O3 Si . C2 H4 . Unspecified)x

CI PMS

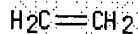
CM 1

STRUCTURE DIAGRAM IS NOT AVAILABLE

CM 2



CM 3



HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1)1

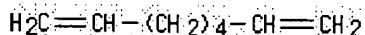
L10 39 ANSWERS REGISTRY COPYRIGHT 2003 ACS

IN Silane, ethenyltrimethoxy-, polymer with ethene, 1,7-octadiene and 1-octene, graft (9CI)

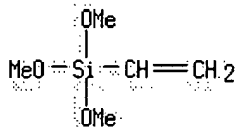
MF (C8 H16 . C8 H14 . C5 H12 O3 Si . C2 H4)x

CI PMS

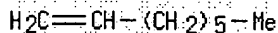
CM 1



CM 2



CM 3



CM 4



HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1)1

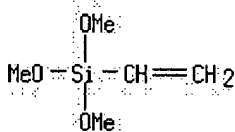
L10 39 ANSWERS REGISTRY COPYRIGHT 2003 ACS

IN Silane, ethenyltrimethoxy-, polymer with ethene and 1-octene (9CI)

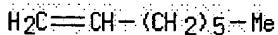
MF (C8 H16 . C5 H12 O3 Si . C2 H4)x

CI PMS

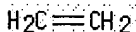
CM 1



CM 2



CM 3



HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1)1

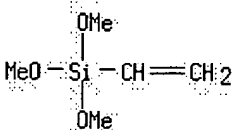
L10 39 ANSWERS REGISTRY COPYRIGHT 2003 ACS

IN Silane, ethenyltrimethoxy-, polymer with 1-butene and ethene (9CI)

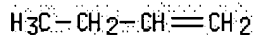
MF (C5 H12 O3 Si . C4 H8 . C2 H4)x

CI PMS

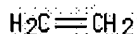
CM 1



CM 2



CM 3



HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1)1

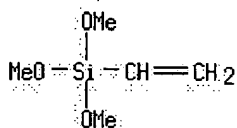
L10 39 ANSWERS REGISTRY COPYRIGHT 2003 ACS

IN Silane, ethenyltrimethoxy-, polymer with 1-butene and ethene, graft (9CI)

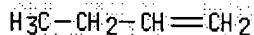
MF (C5 H12 O3 Si . C4 H8 . C2 H4)x

CI PMS

CM 1



CM 2



CM 3



HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1)0

=> s l10 not(octa? or bute?)

757609 OCTA?

358044 BUTE?

L11 29 L10 NOT(OCTA? OR BUTE?)

=> d scan

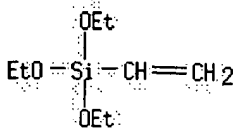
L11 29 ANSWERS REGISTRY COPYRIGHT 2003 ACS

IN Silane, ethenyltriethoxy-, polymer with ethene, graft (9CI)

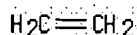
MF (C8 H18 O3 Si . C2 H4)x

CI PMS

CM 1



CM 2



HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1)1

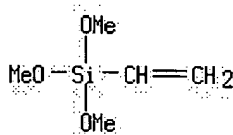
L11 29 ANSWERS REGISTRY COPYRIGHT 2003 ACS

IN 2,5-Furandione, polymer with ethene and ethenyltrimethoxysilane (9CI)

MF (C5 H12 O3 Si . C4 H2 O3 . C2 H4)x

CI PMS

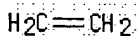
CM 1



CM 2



CM 3



HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1)1

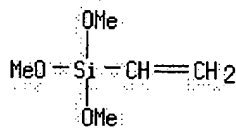
L11 29 ANSWERS REGISTRY COPYRIGHT 2003 ACS

IN Silane, ethenyltrimethoxy-, polymer with ethene (9CI)

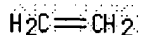
MF (C5 H12 O3 Si . C2 H4)x

CI PMS

CM 1



CM 2



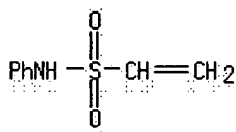
HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1)1

L11 29 ANSWERS REGISTRY COPYRIGHT 2003 ACS

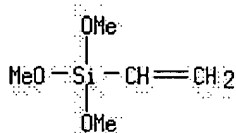
STN Columbus

IN Ethenesulfonamide, N-phenyl-, polymer with ethenyltrimethoxysilane (9CI)
MF (C8 H9 N O2 S . C5 H12 O3 Si)x
CI PMS

CM 1



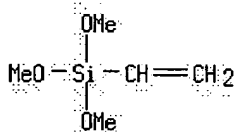
CM 2



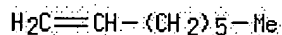
HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1)1

L11 29 ANSWERS REGISTRY COPYRIGHT 2003 ACS
IN 2,5-Furandione, polymer with ethene, ethenyltrimethoxysilane and 1-octene, graft (9CI)
MF (C8 H16 . C5 H12 O3 Si . C2 H4)x
CI PMS

CM 1



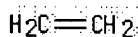
CM 2



CM 3



CM 4

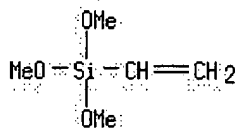


HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1)1

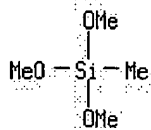
L11 29 ANSWERS REGISTRY COPYRIGHT 2003 ACS
IN Silane, dimethoxydimethyl-, polymer with ethenyltrimethoxysilane,

ethoxyethene and trimethoxymethylsilane (9CI)
MF (C5 H12 O3 Si . C4 H12 O3 Si . C4 H12 O2 Si . C4 H8 O)x
CI PMS

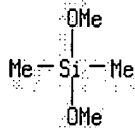
CM 1



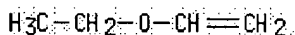
CM 2



CM 3



CM 4



HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1)0

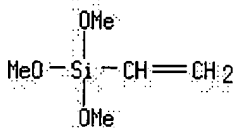
=> s l11 not(furan? or phen? or dimethoxydime?)
779732 FURAN?
9692387 PHEN?
706 DIMETHOXYDIME?

L12 22 L11 NOT(FURAN? OR PHEN? OR DIMETHOXYDIME?)

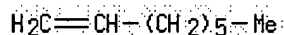
=> d scan

L12 22 ANSWERS REGISTRY COPYRIGHT 2003 ACS
IN Silane, ethenyltrimethoxy-, polymer with ethene and 1-octene (9CI)
MF (C8 H16 . C5 H12 O3 Si . C2 H4)x
CI PMS

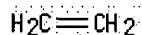
CM 1



CM 2



CM 3



HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1)1

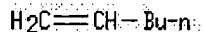
L12 22 ANSWERS REGISTRY COPYRIGHT 2003 ACS

IN Silane, ethenyltriethoxy-, polymer with ethene and 1-hexene, graft (9CI)

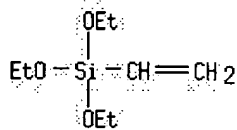
MF (C8 H18 O3 Si . C6 H12 . C2 H4)x

CI PMS

CM 1



CM 2



CM 3



HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1)1

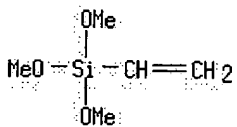
L12 22 ANSWERS REGISTRY COPYRIGHT 2003 ACS

IN Silane, ethenyltrimethoxy-, polymer with ethene and 2-hexene (9CI)

MF (C6 H12 . C5 H12 O3 Si . C2 H4)x

CI PMS

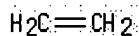
CM 1



CM 2



CM 3



HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1)1

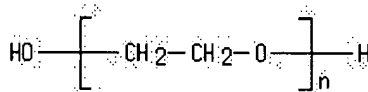
L12 22 ANSWERS REGISTRY COPYRIGHT 2003 ACS

IN Silane, ethenyltrimethoxy-, polymer with ethene and a-hydro-w-hydroxypoly(oxy-1,2-ethanediyl) (9CI)

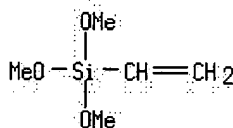
MF (C5 H12 O3 Si . (C2 H4 O)n H2 O . C2 H4)x

CI PMS

CM 1



CM 2



CM 3



HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1)0

=> s l12 not(hydro? or octe? or hexen?)

6651043 HYDRO?

65623 OCTE?

225442 HEXEN?

L13 9 L12 NOT(HYDRO? OR OCTE? OR HEXEN?)

=> d scan

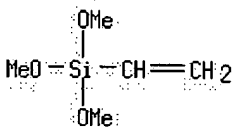
L13 9 ANSWERS REGISTRY COPYRIGHT 2003 ACS

IN Silane, ethenyltrimethoxy-, polymer with ethene, graft (9CI)

MF (C5 H12 O3 Si . C2 H4)x

CI PMS

CM 1



CM 2



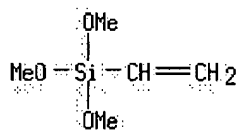
HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1)1

L13 9 ANSWERS REGISTRY COPYRIGHT 2003 ACS
 IN Silane, ethenyltrimethoxy-, polymer with CM 2551 and ethene, graft (9CI)
 MF (C5 H12 O3 Si . C2 H4 . Unspecified)x
 CI PMS

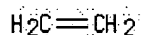
CM 1

STRUCTURE DIAGRAM IS NOT AVAILABLE

CM 2



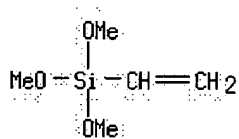
CM 3



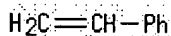
HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1)1

L13 9 ANSWERS REGISTRY COPYRIGHT 2003 ACS
 IN Silane, ethenyltrimethoxy-, polymer with ethene and ethenylbenzene, graft (9CI)
 MF (C8 H8 . C5 H12 O3 Si . C2 H4)x
 CI PMS

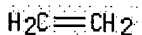
CM 1



CM 2



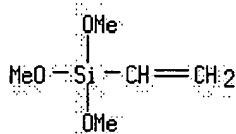
CM 3



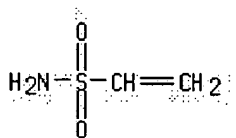
HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1)1

L13 9 ANSWERS REGISTRY COPYRIGHT 2003 ACS
 IN Ethenesulfonamide, polymer with ethenyltrimethoxysilane (9CI)
 MF (C5 H12 O3 Si . C2 H5 N O2 S)x
 CI PMS

CM 1



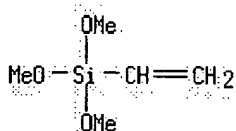
CM 2



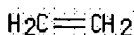
HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1)1

L13 9 ANSWERS REGISTRY COPYRIGHT 2003 ACS
 IN Silane, ethenyltriethoxy-, polymer with ethene (9CI)
 MF (C5 H12 O3 Si . C2 H4)x
 CI PMS

CM 1



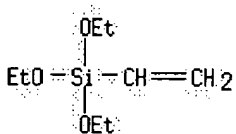
CM 2



HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1)1

L13 9 ANSWERS REGISTRY COPYRIGHT 2003 ACS
 IN Silane, ethenyltriethoxy-, polymer with ethene, graft (9CI)
 MF (C8 H18 O3 Si . C2 H4)x
 CI PMS

CM 1



CM 2

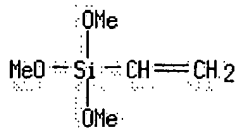


HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1)1

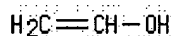
L13 9 ANSWERS REGISTRY COPYRIGHT 2003 ACS
 IN Ethenol, polymer with ethene and ethenyltrimethoxysilane (9CI)

MF (C5 H12 O3 Si . C2 H4 O . C2 H4)x
CI PMS

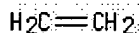
CM 1



CM 2



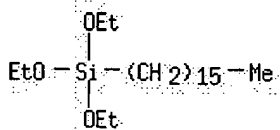
CM 3



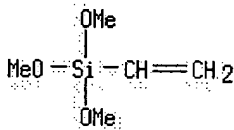
HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1)1

L13 9 ANSWERS REGISTRY COPYRIGHT 2003 ACS
IN Silane, ethenyltrimethoxy-, polymer with ethene and
triethoxyhexadecylsilane (9CI)
MF (C22 H48 O3 Si . C5 H12 O3 Si . C2 H4)x
CI PMS

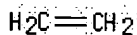
CM 1



CM 2



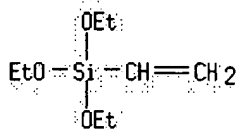
CM 3



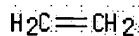
HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1)1

L13 9 ANSWERS REGISTRY COPYRIGHT 2003 ACS
IN Silane, ethenyltriethoxy-, polymer with ethene (9CI)
MF (C8 H18 O3 Si . C2 H4)x
CI PMS

STN Columbus
CM 1



CM 2



ALL ANSWERS HAVE BEEN SCANNED

=> s l13 not(ethenol or triethoxyhex? or ethenesul? or ethenylben?)
5386 ETHENOL
38 TRIETHOXYHEX?
3844 ETHENESUL?
75766 ETHENYLBEN?

L14 5 L13 NOT(ETHENOL OR TRIETHOXYHEX? OR ETHENESUL? OR
ETHENYLBEN?)

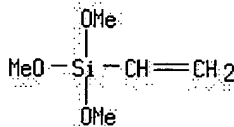
=> d scan

L14 5 ANSWERS REGISTRY COPYRIGHT 2003 ACS
IN Silane, ethenyltrimethoxy-, polymer with CM 2551 and ethene, graft
(9CI)
MF (C5 H12 O3 Si . C2 H4 . Unspecified)x
CI PMS

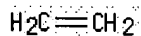
CM 1

STRUCTURE DIAGRAM IS NOT AVAILABLE

CM 2



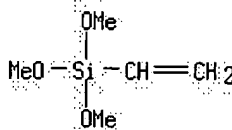
CM 3



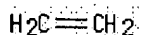
HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1)1

L14 5 ANSWERS REGISTRY COPYRIGHT 2003 ACS
IN Silane, ethenyltrimethoxy-, polymer with ethene, graft (9CI)
MF (C5 H12 O3 Si . C2 H4)x
CI PMS

CM 1



CM 2



HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1)0

=> s l14 not 2551

559 2551

L15 4 L14 NOT 2551

=> sel name l15

E1 THROUGH E29 ASSIGNED

=> file ca

COST IN U.S. DOLLARS	ENTRY	SINCE FILE SESSION	TOTAL
FULL ESTIMATED COST		209.28	209.49

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FILE COVERS 1907 - 6 Mar 2003 VOL 138 ISS 11
 FILE LAST UPDATED: 6 Mar 2003 (20030306/ED)

This file contains CAS Registry Numbers for easy and accurate substance identification.

=> s l15 or e1-29

603 L15

16381417 "A"/BI

28375 "151"/BI

437039 "ETHYLENE"/BI

3155 "ETHYLENES"/BI

438555 "ETHYLENE"/BI

(("ETHYLENE" OR "ETHYLENES")/BI)

486264 "COPOLYMER"/BI

163795 "COPOLYMERS"/BI

529230 "COPOLYMER"/BI

(("COPOLYMER" OR "COPOLYMERS")/BI)

1 "A 151-ETHYLENE COPOLYMER"/BI

(("A(W)151(W)ETHYLENE(W)COPOLYMER")/BI)

15509 "AQUA"/BI

65 "AQUAS"/BI

777 "AQUAE"/BI

16349 "AQUA"/BI

(("AQUA" OR "AQUAS" OR "AQUAE")/BI)

37759 "LINK"/BI

19771 "LINKS"/BI

54755 "LINK"/BI

(("LINK" OR "LINKS")/BI)

7730 "910"/BI

2 "AQUA-LINK AT 910"/BI

(("AQUA(W)LINK(1W)910")/BI)

15509 AQUA/BI

65 AQUAS/BI

777 AQUAE/BI

16349 AQUA/BI

((AQUA OR AQUAS OR AQUAE)/BI)

37759 LINK/BI

19771 LINKS/BI

54755 LINK/BI

((LINK OR LINKS)/BI)

6 AQUA-LINK/BI

((AQUA(W)LINK)/BI)

135 "DFDA"/BI

1 "DFDAS"/BI

136 "DFDA"/BI

(("DFDA" OR "DFDAS")/BI)

0 "5451NT"/BI

0 "DFDA 5451NT"/BI

(("DFDA(W)"5451NT")/BI)

8 "ETHENYLTRIMETHOXSILANE"/BI

437039 "ETHYLENE"/BI

3155 "ETHYLENES"/BI

438555 "ETHYLENE"/BI

(("ETHYLENE" OR "ETHYLENES")/BI)

486264 "COPOLYMER"/BI

163795 "COPOLYMERS"/BI

529230 "COPOLYMER"/BI

(("COPOLYMER" OR "COPOLYMERS")/BI)

0 "ETHENYLTRIMETHOXSILANE-ETHYLENE COPOLYMER"/BI

(("ETHENYLTRIMETHOXSILANE(W)ETHYLENE(W)COPOLYMER")/B

437039 "ETHYLENE"/BI

3155 "ETHYLENES"/BI

438555 "ETHYLENE"/BI

(("ETHYLENE" OR "ETHYLENES")/BI)

460 "TRIETHOXYVINYLSILANE"/BI

1 "TRIETHOXYVINYLSILANES"/BI

461 "TRIETHOXYVINYLSILANE"/BI

(("TRIETHOXYVINYLSILANE" OR

"TRIETHOXYVINYLSILANES")/BI)

486264 "COPOLYMER"/BI

163795 "COPOLYMERS"/BI

529230 "COPOLYMER"/BI

(("COPOLYMER" OR "COPOLYMERS")/BI)

9 "ETHYLENE-TRIETHOXYVINYLSILANE COPOLYMER"/BI

(("ETHYLENE(W)TRIETHOXYVINYLSILANE(W)COPOLYMER")/BI)

437039 "ETHYLENE"/BI

3155 "ETHYLENES"/BI

438555 "ETHYLENE"/BI

(("ETHYLENE" OR "ETHYLENES")/BI)

460 "TRIETHOXYVINYLSILANE"/BI

1 "TRIETHOXYVINYLSILANES"/BI

461 "TRIETHOXYVINYLSILANE"/BI

(("TRIETHOXYVINYLSILANE" OR

"TRIETHOXYVINYLSILANES")/BI)

76767 "GRAFT"/BI

10536 "GRAFTS"/BI

81084 "GRAFT"/BI

(("GRAFT" OR "GRAFTS")/BI)

486264 "COPOLYMER"/BI

163795 "COPOLYMERS"/BI

529230 "COPOLYMER"/BI

(("COPOLYMER" OR "COPOLYMERS")/BI)

11 "ETHYLENE-TRIETHOXYVINYLSILANE GRAFT COPOLYMER"/B

(("ETHYLENE(W)TRIETHOXYVINYLSILANE(W)GRAFT(W)COPOLYM
R")

/BI)

437039 "ETHYLENE"/BI

3155 "ETHYLENES"/BI

438555 "ETHYLENE"/BI

(("ETHYLENE" OR "ETHYLENES")/BI)

460 "TRIETHOXYVINYLSILANE"/BI

1 "TRIETHOXYVINYLSILANES"/BI

461 "TRIETHOXYVINYLSILANE"/BI

(("TRIETHOXYVINYLSILANE" OR

"TRIETHOXYVINYLSILANES")/BI)

861951 "POLYMER"/BI

729963 "POLYMERS"/BI

1175935 "POLYMER"/BI

(("POLYMER" OR "POLYMERS")/BI)

2 "ETHYLENE-TRIETHOXYVINYLSILANE POLYMER"/BI

(("ETHYLENE(W)TRIETHOXYVINYLSILANE(W)POLYMER")/

STN Columbus

437039 "ETHYLENE"/BI
 3155 "ETHYLENES"/BI
 438555 "ETHYLENE"/BI
 (("ETHYLENE" OR "ETHYLENES")/BI)
 635 "TRIMETHOXYVINYLSILANE"/BI
 1 "TRIMETHOXYVINYLSILANES"/BI
 635 "TRIMETHOXYVINYLSILANE"/BI
 (("TRIMETHOXYVINYLSILANE" OR
 "TRIMETHOXYVINYLSILANES")/BI)
 486264 "COPOLYMER"/BI
 163795 "COPOLYMERS"/BI
 529230 "COPOLYMER"/BI
 (("COPOLYMER" OR "COPOLYMERS")/BI)
 53 "ETHYLENE-TRIMETHOXYVINYLSILANE COPOLYMER"/BI

((("ETHYLENE"(W)"TRIMETHOXYVINYLSILANE"(W)"COPOLYMER")/BI)
 437039 "ETHYLENE"/BI
 3155 "ETHYLENES"/BI
 438555 "ETHYLENE"/BI
 (("ETHYLENE" OR "ETHYLENES")/BI)
 635 "TRIMETHOXYVINYLSILANE"/BI
 1 "TRIMETHOXYVINYLSILANES"/BI
 635 "TRIMETHOXYVINYLSILANE"/BI
 (("TRIMETHOXYVINYLSILANE" OR
 "TRIMETHOXYVINYLSILANES")/BI)
 76767 "GRAFT"/BI
 10536 "GRAFTS"/BI
 81084 "GRAFT"/BI
 (("GRAFT" OR "GRAFTS")/BI)
 486264 "COPOLYMER"/BI
 163795 "COPOLYMERS"/BI
 529230 "COPOLYMER"/BI
 (("COPOLYMER" OR "COPOLYMERS")/BI)
 44 "ETHYLENE-TRIMETHOXYVINYLSILANE GRAFT
 COPOLYMER"/BI

((("ETHYLENE"(W)"TRIMETHOXYVINYLSILANE"(W)"GRAFT"(W)"COPOLYM
 ER"
)/BI)
 437039 "ETHYLENE"/BI
 3155 "ETHYLENES"/BI
 438555 "ETHYLENE"/BI
 (("ETHYLENE" OR "ETHYLENES")/BI)
 635 "TRIMETHOXYVINYLSILANE"/BI
 1 "TRIMETHOXYVINYLSILANES"/BI
 635 "TRIMETHOXYVINYLSILANE"/BI
 (("TRIMETHOXYVINYLSILANE" OR
 "TRIMETHOXYVINYLSILANES")/BI)
 861951 "POLYMER"/BI
 729963 "POLYMERS"/BI
 1175935 "POLYMER"/BI
 (("POLYMER" OR "POLYMERS")/BI)
 2 "ETHYLENE-TRIMETHOXYVINYLSILANE POLYMER"/BI

((("ETHYLENE"(W)"TRIMETHOXYVINYLSILANE"(W)"POLYMER")/BI)
 437039 "ETHYLENE"/BI
 3155 "ETHYLENES"/BI
 438555 "ETHYLENE"/BI
 (("ETHYLENE" OR "ETHYLENES")/BI)
 1335 "VINYLTRIETHOXY-SILANE"/BI
 3 "VINYLTRIETHOXY-SILANES"/BI
 1336 "VINYLTRIETHOXY-SILANE"/BI
 (("VINYLTRIETHOXY-SILANE" OR
 "VINYLTRIETHOXY-SILANES")/BI)
 486264 "COPOLYMER"/BI
 163795 "COPOLYMERS"/BI
 529230 "COPOLYMER"/BI
 (("COPOLYMER" OR "COPOLYMERS")/BI)
 16 "ETHYLENE-VINYLTRIETHOXY-SILANE COPOLYMER"/BI

((("ETHYLENE"(W)"VINYLTRIETHOXY-SILANE"(W)"COPOLYMER")/BI)
 437039 "ETHYLENE"/BI
 3155 "ETHYLENES"/BI
 438555 "ETHYLENE"/BI
 (("ETHYLENE" OR "ETHYLENES")/BI)
 1335 "VINYLTRIETHOXY-SILANE"/BI
 3 "VINYLTRIETHOXY-SILANES"/BI
 1336 "VINYLTRIETHOXY-SILANE"/BI

((("VINYLTRIETHOXY-SILANE" OR
 "VINYLTRIETHOXY-SILANES")/BI)
 76767 "GRAFT"/BI
 10536 "GRAFTS"/BI
 81084 "GRAFT"/BI
 (("GRAFT" OR "GRAFTS")/BI)
 486264 "COPOLYMER"/BI
 163795 "COPOLYMERS"/BI
 529230 "COPOLYMER"/BI
 (("COPOLYMER" OR "COPOLYMERS")/BI)
 14 "ETHYLENE-VINYLTRIETHOXY-SILANE GRAFT COPOLYMER"/B

((("ETHYLENE"(W)"VINYLTRIETHOXY-SILANE"(W)"GRAFT"(W)"COPOLYM
 R")
 /BI)

437039 "ETHYLENE"/BI
 3155 "ETHYLENES"/BI
 438555 "ETHYLENE"/BI
 (("ETHYLENE" OR "ETHYLENES")/BI)
 2201 "VINYLTRIMETHOXY-SILANE"/BI
 4 "VINYLTRIMETHOXY-SILANES"/BI
 2202 "VINYLTRIMETHOXY-SILANE"/BI
 (("VINYLTRIMETHOXY-SILANE" OR
 "VINYLTRIMETHOXY-SILANES")/BI)
 486264 "COPOLYMER"/BI
 163795 "COPOLYMERS"/BI
 529230 "COPOLYMER"/BI
 (("COPOLYMER" OR "COPOLYMERS")/BI)
 121 "ETHYLENE-VINYLTRIMETHOXY-SILANE COPOLYMER"/BI

((("ETHYLENE"(W)"VINYLTRIMETHOXY-SILANE"(W)"COPOLYMER")/BI)
 437039 "ETHYLENE"/BI
 3155 "ETHYLENES"/BI
 438555 "ETHYLENE"/BI
 (("ETHYLENE" OR "ETHYLENES")/BI)
 2201 "VINYLTRIMETHOXY-SILANE"/BI
 4 "VINYLTRIMETHOXY-SILANES"/BI
 2202 "VINYLTRIMETHOXY-SILANE"/BI
 (("VINYLTRIMETHOXY-SILANE" OR
 "VINYLTRIMETHOXY-SILANES")/BI)
 76767 "GRAFT"/BI
 10536 "GRAFTS"/BI
 81084 "GRAFT"/BI
 (("GRAFT" OR "GRAFTS")/BI)
 486264 "COPOLYMER"/BI
 163795 "COPOLYMERS"/BI
 529230 "COPOLYMER"/BI
 (("COPOLYMER" OR "COPOLYMERS")/BI)
 142 "ETHYLENE-VINYLTRIMETHOXY-SILANE GRAFT
 COPOLYMER"/BI

((("ETHYLENE"(W)"VINYLTRIMETHOXY-SILANE"(W)"GRAFT"(W)"COPOL
 ER"
)/BI)

4748 "HM"/BI
 725 "HMS"/BI
 5435 "HM"/BI
 (("HM" OR "HMS")/BI)
 233 "600A"/BI
 9 "HM 600A"/BI
 (("HM"(W)"600A")/BI)
 125954 "CH"/BI
 221 "CHES"/BI
 126174 "CH"/BI
 (("CH" OR "CHES")/BI)
 73726 "750"/BI
 4 "LINKLON CH 750"/BI
 (("LINKLON"(W)"CH"(W)"750")/BI)
 126 "LINKLON"/BI
 125954 "CH"/BI
 221 "CHES"/BI
 126174 "CH"/BI
 (("CH" OR "CHES")/BI)
 8 "750T"/BI
 4 "LINKLON CH 750T"/BI
 (("LINKLON"(W)"CH"(W)"750T")/BI)
 126 "LINKLON"/BI
 162125 "HE"/BI

STN Columbus

720 "HES"/BI
 162811 "HE"/BI
 ((("HE" OR "HES")/BI)
 5 "707N"/BI
 2 "LINKLON HE 707N"/BI
 ((("LINKLON"(W)"HE"(W)"707N")/BI)
 126 "LINKLON"/BI
 4748 "HM"/BI
 725 "HMS"/BI
 5435 "HM"/BI
 ((("HM" OR "HMS")/BI)
 233 "600A"/BI
 6 "LINKLON HM 600A"/BI
 ((("LINKLON"(W)"HM"(W)"600A")/BI)
 126 "LINKLON"/BI
 35021 "XE"/BI
 300 "XES"/BI
 35297 "XE"/BI
 ((("XE" OR "XES")/BI)
 192607 "800"/BI
 2 "LINKLON XE 800"/BI
 ((("LINKLON"(W)"XE"(W)"800")/BI)
 126 "LINKLON"/BI
 1489 "XF"/BI
 150 "XFS"/BI
 1638 "XF"/BI
 ((("XF" OR "XFS")/BI)
 24 "800T"/BI
 10 "LINKLON XF 800T"/BI
 ((("LINKLON"(W)"XF"(W)"800T")/BI)
 126 "LINKLON"/BI
 1859 "XH"/BI
 5 "XHS"/BI
 1864 "XH"/BI
 ((("XH" OR "XHS")/BI)
 73726 "750"/BI
 1 "LINKLON XH 750"/BI
 ((("LINKLON"(W)"XH"(W)"750")/BI)
 45 "NCPE"/BI
 43 "6664"/BI
 1 "NCPE 6664"/BI
 ((("NCPE"(W)"6664")/BI)
 7 SIOGRATHENE/BI
 2201 "VINYLTRIMETHOXYSILANE"/BI
 4 "VINYLTRIMETHOXYSILANES"/BI
 2202 "VINYLTRIMETHOXYSILANE"/BI
 ((("VINYLTRIMETHOXYSILANE" OR
 "VINYLTRIMETHOXYSILANES")/BI)
 437039 "ETHYLENE"/BI
 3155 "ETHYLENES"/BI
 438555 "ETHYLENE"/BI
 ((("ETHYLENE" OR "ETHYLENES")/BI)
 76767 "GRAFT"/BI
 10536 "GRAFTS"/BI
 81084 "GRAFT"/BI
 ((("GRAFT" OR "GRAFTS")/BI)
 861951 "POLYMER"/BI
 729963 "POLYMERS"/BI
 1175935 "POLYMER"/BI
 ((("POLYMER" OR "POLYMERS")/BI)
 2 "VINYLTRIMETHOXYSILANE-ETHYLENE GRAFT POLYMER"/BI
 ((("VINYLTRIMETHOXYSILANE"(W)"ETHYLENE"(W)"GRAFT"(W)"POLYMER
 ")/BI)
 1255484 "X"/BI
 27581 "176"/BI
 12 "X 176"/BI
 ((("X"(W)"176")/BI)
 1255484 "X"/BI
 26736 "183"/BI
 9 "X 183"/BI
 ((("X"(W)"183")/BI)
 1859 "XH"/BI
 5 "XHS"/BI
 1864 "XH"/BI
 ((("XH" OR "XHS")/BI)
 73726 "750"/BI

1 "XH 750"/BI
 ((("XH"(W)"750")/BI)
 L16 664 L15 OR ("A 151-ETHYLENE COPOLYMER"/BI OR "AQUA-LINK
 AT 910"/BI
 OR AQUA-LINK/BI OR "DFDA 5451NT"/BI OR
 "ETHENYLTRIMETHOXYSILANE-
 ETHYLENE COPOLYMER"/BI OR "ETHYLENE-
 TRIETHOXYVINYLSILANE COPOLYM
 ER"/BI OR "ETHYLENE-TRIETHOXYVINYLSILANE GRAFT
 COPOLYMER"/BI OR
 "ETHYLENE-TRIETHOXYVINYLSILANE POLYMER"/BI OR
 "ETHYLENE-TRIMETHO
 XYVINYLSILANE COPOLYMER"/BI OR "ETHYLENE-
 TRIMETHOXYVINYLSILANE
 GRAFT COPOLYMER"/BI OR "ETHYLENE-
 TRIMETHOXYVINYLSILANE POLYMER/
 BI OR "ETHYLENE-VINYLTRIETHOXYSILANE COPOLYMER"/BI O
 "ETHYLENE-
 VINYLTRIETHOXYSILANE GRAFT COPOLYMER"/BI OR
 "ETHYLENE-VINYLTRIME
 THOXYSILANE COPOLYMER"/BI OR "ETHYLENE-
 VINYLTRIMETHOXYSILANE
 GRAFT COPOLYMER"/BI OR "HM 600A"/BI OR "LINKLON CH 750
 OR
 "LINKLON CH 750T"/BI OR "LINKLON HE 707N"/BI OR "LINKLON
 HM
 600A"/BI OR "LINKLON XE 800"/BI OR "LINKLON XF 800T"/BI OR
 "LINK
 LON XH 750"/BI OR "NCPE 6664"/BI OR SIOGRATHENE/BI OR
 "VINYLTRIM
 ETHOXYSILANE-ETHYLENE GRAFT POLYMER"/BI OR "X 176"/B
 OR "X
 183"/BI OR "XH 750"/BI)
 => s l16 and glass
 586317 GLASS
 111075 GLASSES
 611045 GLASS
 (GLASS OR GLASSES)
 L17 23 L16 AND GLASS
 => d scan
 L17 23 ANSWERS CA COPYRIGHT 2003 ACS
 IC ICM B32B015-08
 ICS B32B027-00; B32B027-04
 CC 38-3 (Plastics Fabrication and Uses)
 Section cross-reference(s): 76
 TI Laminated sheets for printed circuit boards
 ST printed circuit board laminate; ethylene copolymer laminate board; epoxy
 laminate printed circuit board; dielec property printed circuit board;
 moisture resistance printed circuit board; glass fiber laminate board;
 vinylsilane grafted polyethylene laminate
 IT Glass fibers, uses and miscellaneous
 RL: USES (Uses)
 (epoxy resin preregs contg., laminates with ethylene copolymers and
 metal foils, for printed circuit boards)
 IT Epoxy resins, uses and miscellaneous
 RL: USES (Uses)
 (laminates with triethoxyvinylsilane-grafted polyethylene sheets and
 metal foils, for printed circuit boards)
 IT Electric circuits
 (printed, boards for, laminates of triethoxyvinylsilane-grafted
 polyethylene sheets with epoxy resin preregs and metal foils as, with
 improved dielec. properties at high frequency)
 IT 29503-87-5
 RL: USES (Uses)
 (graft, laminates with epoxy resin preregs and metal foils, for
 printed circuit boards)
 IT 7440-02-0, uses and miscellaneous 7440-50-8, uses and miscellaneous
 RL: USES (Uses)
 (laminates with ethylene copolymer sheets and epoxy resin preregs, for
 printed circuit boards)
 IT 82446-34-2
 RL: USES (Uses)
 (laminates with triethoxyvinylsilane-grafted polyethylene sheets and
 metal foils, for printed circuit boards)

HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1)1

L17 23 ANSWERS CA COPYRIGHT 2003 ACS

IC ICM C08L023-02

ICS C08L025-04; C08J009-00

CC 38-3 (Plastics Fabrication and Uses)

Section cross-reference(s): 37

TI Plastic foam material composed of thermoplastic resin and silane-modified thermoplastic resin

ST polyolefin plastic foam product; silane modified polyolefin blend foam; thermal insulator foam polyolefin blend; compression strength improved polyolefin foam tube

IT Plastics, cellular

RL: PRP (Properties)

(blended silane-modified polyolefin and polyolefin; plastic foam material having superior resilience, improved compression strength, and superior heat-insulating properties)

IT Pipes and Tubes

(of lattice and honeycomb shaped cross section; plastic foam material composed of thermoplastic resin and silane-modified thermoplastic resin having superior resilience, improved compression strength, and heat-insulating properties)

IT Crosslinking catalysts

(plastic foam material composed of thermoplastic resin and silane-modified thermoplastic resin and)

IT Naphthenic acids, uses

RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)

(lead salts, crosslinking catalyst for silane-modified polyolefin; plastic foam material composed of thermoplastic resin and silane-modified thermoplastic resin and)

IT Chains, chemical

(network, semi-interpenetrating, of blended silane-modified polyolefin and polyolefin for plastic foam bodies)

IT 9003-07-0, Polypropylene

RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)

(MH 6, MA 3; plastic foam material composed of thermoplastic resin and silane-modified thermoplastic resin for product having superior resilience, improved compression strength, and superior heat-insulating properties)

IT 24937-78-8, Ethylene-vinyl acetate copolymer

RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)

(V 113K; plastic foam material composed of thermoplastic resin and silane-modified thermoplastic resin for product having superior resilience, improved compression strength, and superior heat-insulating properties)

IT 77-58-7, Dibutyl tin dilaurate 557-05-1, Zinc stearate 557-09-5, Zinc caprylate 589-81-1D, 2-Ethyl hexane, zinc complex 1067-33-0, Dibutyl tin diacetate 3648-18-8, Dioctyl tin dilaurate 6700-85-2, Cobalt octanoate 7774-76-7, Tin oleate 15696-43-2, Lead octanoate

RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)

(crosslinking catalyst for silane-modified polyolefin; plastic foam material composed of thermoplastic resin and silane-modified thermoplastic resin and)

IT 9002-88-4, Polyethylene

RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)

(high-d., JX 20, BZSOA, HY 330B; plastic foam material composed of thermoplastic resin and silane-modified thermoplastic resin for product having superior resilience, improved compression strength, and superior heat-insulating properties)

IT 9003-53-6, Polystyrene 9010-79-1, Ethylene-propylene copolymer

106565-43-9 107240-65-3, Linklon XPM 800HM 107257-99-8, Linklon HM 600A

RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)

(plastic foam material composed of thermoplastic resin and silane-modified thermoplastic resin for product having superior resilience, improved compression strength, and superior heat-insulating properties)

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L17 23 ANSWERS CA COPYRIGHT 2003 ACS

IC ICM H01L031-04

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

Section cross-reference(s): 38

TI Manufacture of solar cell modules

ST solar cell module covering adhesion sheet; silane olefin polymer sheet solar cell module

IT Fluoropolymers, uses

RL: TEM (Technical or engineered material use); USES (Uses)

(back covering; manuf. of solar cell modules having strongly adhered front and back coverings)

IT Glass, uses

RL: TEM (Technical or engineered material use); USES (Uses)

(front covering; manuf. of solar cell modules having strongly adhered front and back coverings)

IT Solar cells

(modules; manuf. of solar cell modules having strongly adhered front and back coverings)

IT 24981-14-4, Tedlar

RL: TEM (Technical or engineered material use); USES (Uses)

(back covering; manuf. of solar cell modules having strongly adhered front and back coverings)

IT 107709-77-3, Ethylene-1-octene-vinyltrimethoxysilane graft copolymer

107719-49-3, Ethylene-vinyl acetate-vinyltrimethoxysilane graft copolymer

113408-96-1, Ethyl acrylate-ethylene-

vinyltrimethoxysilane graft copolymer

223119-16-2

RL: TEM (Technical or engineered material use); USES (Uses)

(manuf. of solar cell modules having strongly adhered front and back coverings)

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IC C08J005-24

CC 38-3 (Plastics Fabrication and Uses)

TI Moisture-curable, stampable sheets

ST vinylsilane grafted polyethylene; glass fiber composite stampable; moisture curable stampable composite

IT Glass fibers, uses and miscellaneous

RL: USES (Uses)

(composites with vinyltrimethoxysilane-grafted polyethylene, moisture-curable, stampable)

IT 35312-82-4

RL: USES (Uses)

(graft, glass fiber composites, moisture-curable, stampable)

HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1)1

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IC ICM C09D003-58

ICS C08K003-00; C08L063-00; C09D005-08

ICI C08L063-00, C08L023-00

CC 42-9 (Coatings, Inks, and Related Products)

TI Curable coatings for thick films

ST curable coating thick impact resistant; epoxy resin thick anticorrosive coating; polyolefin water crosslinkable thick coating; cold impact resistant anticorrosive coating

IT Coating materials

(anticorrosive, impact-resistant, epoxy resins contg. powd., water-crosslinkable polyolefins)

IT 71892-63-2

RL: USES (Uses)

(powd., epoxy resin thick coatings contg., anticorrosive, impact-resistant)

IT 39403-99-1

RL: USES (Uses)

(thick coatings, contg. water-crosslinkable polyethylene powder particles, anticorrosive, impact-resistant)

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IC ICM C09J123-08

ICS C09J143-04; C09J151-06

CC 38-3 (Plastics Fabrication and Uses)

TI Melt-processible moisture-curable ethylene copolymer hot-melt adhesives with improved adhesion at elevated temperatures

ST ethylene copolymer adhesive plastic glass bonding; polyester glass bonding ethylene copolymer adhesive; PVC glass bonding ethylene

STN Columbus

copolymer adhesive; wood plastic bonding ethylene copolymer adhesive; trimethoxysilane graft copolymer adhesive moisture curable

IT Polyesters, uses

RL: NUU (Other use, unclassified); USES (Uses)

(bonding to glass; melt-processible moisture-curable ethylene copolymer adhesives with improved adhesion at elevated temps. for)

IT Glass, oxide

RL: NUU (Other use, unclassified); USES (Uses)

(bonding to plastics; melt-processible moisture-curable adhesives with improved adhesion at elevated temps. for)

IT Polymerization

(graft, of vinylalkoxysilanes onto ethylene copolymers; for melt-processible moisture-curable hot-melt adhesives with improved adhesion at elevated temps.)

IT Adhesives

RL: TEM (Technical or engineered material use); USES (Uses)

(hot-melt, melt-processible moisture-curable ethylene copolymer adhesives with improved adhesion at elevated temps.)

IT 9002-86-2, PVC 170346-47-1, Mylar 700D

RL: NUU (Other use, unclassified); USES (Uses)

(bonding to glass; melt-processible moisture-curable ethylene copolymer adhesives with improved adhesion at elevated temps. for)

IT 169504-95-4

RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)

(melt-processible moisture-curable adhesives with improved adhesion at elevated temps.)

HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1)1

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CC 35-8 (Chemistry of Synthetic High Polymers)

Section cross-reference(s): 37

TI Study on graft reactions of polyethylenes with silanes

ST polyethylene silane graft polymn kinetics activation energy

IT Linear low density polyethylenes

RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)

(graft polymers with silanes; graft reactions of polyethylenes with silanes)

IT Activation energy

Glass transition temperature

(graft reactions of polyethylenes with silanes)

IT Polymerization catalysts

Polymerization enthalpy

Polymerization kinetics

(graft, graft reactions of polyethylenes with silanes)

IT 78-08-0, A 151 2768-02-7, A 171 9002-88-4, 5000S

RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)

(graft reactions of polyethylenes with silanes)

IT 74-85-1DP, Ethylene, polymers with a-olefin and silanes, graft

78-08-0DP, A 151, graft polymers with linear low-d. polyethylenes

2768-02-7DP, A 171, graft polymers with linear low-d. polyethylenes

107257-99-8P 107709-22-8P

RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)

(graft reactions of polyethylenes with silanes)

IT 80-43-3, DCP 1068-27-5, 2,5-Dimethyl-2,5-bis(tert-butylperoxy)-3-hexyne

RL: CAT (Catalyst use); USES (Uses)

(initiator; graft reactions of polyethylenes with silanes)

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IC B32B015-08; B32B027-06; H05K001-03

CC 38-3 (Plastics Fabrication and Uses)

TI Metal-covered laminate

ST metal plastic laminate dielec property; copper plastic laminate dielec

property; epoxy copper laminate dielec property; ethylene copolymer laminate dielec property; vinyltrimethoxysilane copolymer laminate dielec

property

IT Glass fibers, uses and miscellaneous

RL: USES (Uses)

(epoxy resins reinforced by, laminates with metals and plastics, with good dielec. properties)

IT Epoxy resins, uses and miscellaneous

RL: USES (Uses)

(laminates with metals and plastics, with good dielec. properties.)

IT Plastics, laminated

RL: USES (Uses)

(with metals, with good dielec. properties)

IT Polyimides, uses and miscellaneous

Polysulfones

RL: USES (Uses)

(polyether-, laminates with metals and plastics, with good dielec. properties)

IT Polyethers

RL: USES (Uses)

(polyimide-, laminates with metals and plastics, with good dielec. properties)

IT Polyethers

RL: USES (Uses)

(polysulfone-, laminates with metals and plastics, with good dielec. properties)

IT 7440-02-0, uses and miscellaneous 7440-50-8, uses and miscellaneous

RL: USES (Uses)

(foil, laminates with plastics, with good dielec. properties)

IT 35312-82-4

RL: USES (Uses)

(graft, laminates with metals and plastics, with good dielec. properties)

IT 25135-51-7 61128-24-3 82446-34-2 88813-74-5 88814-33-9

RL: USES (Uses)

(laminates with metals and plastics, with good dielec. properties.)

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IC ICM C08L023-02

ICS C08K003-00; C08K005-57; C08L023-08; C08L051-06

CC 37-6 (Plastics Manufacture and Processing)

TI Polyolefin resin compositions

ST ethylene vinylalkoxysilane copolymer polyolefin blend; alkyltin oxide

polyolefin blend; vinyltrimethoxysilane grafted polyethylene polypropylene

blend; glass fiber polypropylene blend; butyltin oxide laurate

polypropylene blend; impact resistance polyolefin resin blend;

crosslinking catalyst alkyltin oxide

IT Crosslinking catalysts

(alkyltin oxides, for ethylene-vinylsilane copolymers)

IT Glass fibers, uses and miscellaneous

RL: USES (Uses)

(fillers, vinylalkoxysilane-ethylene copolymer-polyolefin blends contg., crosslinked, impact-resistant)

IT Plastics, reinforced

RL: USES (Uses)

(glass fiber-, ethylene-vinylalkoxysilane copolymer-polyolefin blends, crosslinked, impact-resistant)

IT 80685-41-2

RL: CAT (Catalyst use); USES (Uses)

(catalysts, for hydrolytic crosslinking of ethylene-vinyltrimethoxysilane copolymers)

IT 9003-07-0

RL: USES (Uses)

(ethylene-vinyltrimethoxysilane copolymer blends, crosslinked, glass fiber-reinforced, impact-resistant)

IT 1344-28-1, uses and miscellaneous 7631-86-9, uses and miscellaneous 10101-39-0

RL: USES (Uses)

(fillers, vinylalkoxysilane-ethylene copolymer-polyolefin blends contg., crosslinked, impact-resistant)

IT 35312-82-4

RL: USES (Uses)

(graft, polypropylene blends, short glass-fiber reinforced, crosslinked, impact-resistant)

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IC ICM B32B027-32

ICS B32B027-32; B29C055-02; B29C071-02; B29K023-00; B29L009-00

CC 38-3 (Plastics Fabrication and Uses)

Section cross-reference(s): 40

TI Fiber-reinforced polyolefin laminated sheets with good mechanical and

melt-adhesion properties, and manufacture thereof

ST fiber reinforced polyolefin laminated sheet; crosslinked polypropylene

laminated sheet melt adhesion; mech property polyolefin fiber formation

sheet; latent crosslinkable polyolefin laminated sheet

- IT Adhesive films
(fiber-reinforced polyolefin laminated sheets with good mech. and melt-adhesion properties as substitutes for glass fiber-reinforced sheets)
- IT Polyolefin fibers
RL: IMF (Industrial manufacture); POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(fiber-reinforced polyolefin laminated sheets with good mech. and melt-adhesion properties as substitutes for glass fiber-reinforced sheets)
- IT Polyolefins
RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(fiber-reinforced polyolefin laminated sheets with good mech. and melt-adhesion properties as substitutes for glass fiber-reinforced sheets)
- IT Films
(multilayer, fiber-reinforced polyolefin laminated sheets with good mech. and melt-adhesion properties as substitutes for glass fiber-reinforced sheets)
- IT Polysiloxanes, uses
Polysiloxanes, uses
Polysiloxanes, uses
RL: IMF (Industrial manufacture); POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyolefin-, fibers, graft; fiber-reinforced polyolefin laminated sheets with good mech. and melt-adhesion properties as substitutes for glass fiber-reinforced sheets)
- IT Polysiloxanes, uses
RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
(polyolefin-, graft; fiber-reinforced polyolefin laminated sheets with good mech. and melt-adhesion properties as substitutes for glass fiber-reinforced sheets)
- IT Synthetic polymeric fibers, uses
Synthetic polymeric fibers, uses
RL: IMF (Industrial manufacture); POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyolefin-siloxanes, graft; fiber-reinforced polyolefin laminated sheets with good mech. and melt-adhesion properties as substitutes for glass fiber-reinforced sheets)
- IT Polyolefins
RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
(siloxane-, graft; fiber-reinforced polyolefin laminated sheets with good mech. and melt-adhesion properties as substitutes for glass fiber-reinforced sheets)
- IT Polyolefin fibers
Polyolefin fibers
RL: IMF (Industrial manufacture); POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(siloxane-, graft; fiber-reinforced polyolefin laminated sheets with good mech. and melt-adhesion properties as substitutes for glass fiber-reinforced sheets)
- IT 107240-65-3, XPM 800H **107257-99-8, HM 600A**
RL: PEP (Physical, engineering or chemical process); POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(crosslinked; fiber-reinforced polyolefin laminated sheets with good mech. and melt-adhesion properties as substitutes for glass fiber-reinforced sheets)
- IT 9002-88-4, HJ 560W 9003-07-0, MA3
RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(fiber-reinforced polyolefin laminated sheets with good mech. and melt-adhesion properties as substitutes for glass fiber-reinforced sheets)

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- L17 23 ANSWERS CA COPYRIGHT 2003 ACS
CC 10 (Organic Chemistry)
TI Amines related to 2,5-dimethoxyphenethylamine. V. 2,5-Dihydroxy and 2-methoxy-5-hydroxy derivatives

HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1)1

- L17 23 ANSWERS CA COPYRIGHT 2003 ACS
IC B32B027-04; C08J005-24
ICA B32B027-00; H05K001-02; H05K003-00
CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 76
- TI Composite laminates for printed circuit boards
- ST polyethylene graft vinylmethoxysilane copper laminate; epoxy prepreg copper foil laminate; printed circuit board copper laminate; dibutyltin dilaurate silane graft polyethylene
- IT Epoxy resins, uses and miscellaneous
RL: USES (Uses)
(silanol condensation catalysts-contg., glass cloths impregnated with, composite laminates with silane-grafted polyethylene, for printed circuit boards)
- IT Glass fibers, uses and miscellaneous
RL: USES (Uses)
(fabrics, impregnated with silanol condensation catalyst-contg. epoxy resins, composite laminates with silane-grafted polyethylene, for printed circuit boards)
- IT Electric circuits
(printed, from copper foil composite laminates with silane-grafted polyethylene sheets and epoxy resin prepreps)
- IT 7440-50-8, uses and miscellaneous
RL: USES (Uses)
(foil, composite laminates with silane-grafted polyethylene sheets and epoxy resin prepreps, for printed circuit boards)
- IT **29503-87-5**
RL: USES (Uses)
(graft, crosslinkable, composite laminates with epoxy resin prepreps contg. silanol condensation catalysts, for printed circuit boards)
- IT 77-58-7
RL: USES (Uses)
(silanol condensation catalysts, epoxy resin prepreps contg., composite laminates with silane-grafted polyethylene, for printed circuit boards)

HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1)1

- L17 23 ANSWERS CA COPYRIGHT 2003 ACS
IC ICM C08L023-02
ICS C08L023-16; C08L023-06; C08L023-12; C08L051-06; C08L043-04
CC 37-6 (Plastics Manufacture and Processing)
- TI Moldable polyolefin blends containing fiber-reinforced unsaturated alkoxy silane-grafted polyolefins
- ST heat resistance molded polyolefin blend; bending modulus polyolefin molded blend; crosslinked vinyltrimethoxysilane grafted polyolefin blend; silane grafted crosslinked polyolefin blend; polyethylene polyolefin molded blend; ethylene copolymer polyolefin molded blend; propylene copolymer polyolefin molded blend; ethylenenorbornene copolymer polyolefin molded blend; EPDM rubber polyolefin molded blend; glass reinforced polyolefin molded blend; injection moldable polyolefin blend
- IT Plastics, extruded
Plastics, molded
RL: USES (Uses)
(polyolefin blends, contg. crosslinked fiber-reinforced alkoxy silane-grafted polyolefins, for improved bending strength and heat resistance)
- IT Glass fibers, uses and miscellaneous
RL: USES (Uses)
(polyolefin molded blends contg. crosslinked alkoxy silane-grafted polyolefins and, with improved bending strength and heat resistance)
- IT Heat-resistant materials
(polyolefin molded blends, fiber-reinforced, contg. crosslinked alkoxy silane-grafted polyolefins)
- IT Crosslinking catalysts
(tin compds., for fiber-reinforced alkoxy silane-grafted polyolefins)
- IT 77-58-7, Dibutyltin dilaurate 1067-33-0
RL: CAT (Catalyst use); USES (Uses)
(catalysts, for crosslinking fiber-reinforced alkoxy silane-grafted polyolefins)
- IT 107162-99-2P 107240-65-3P 107240-66-4P, Ethylene-propylene-

vinyltrimethoxysilane graft copolymer 107257-97-6P **107257-99-8P**

, Ethylene-vinyltrimethoxysilane graft copolymer

RL: PREP (Preparation)

(manuf. of crosslinked, contg. glass fibers, for blending with polyolefins in prepn. of moldings with improved bending strength and heat resistance)

IT 115-07-1D, polymers, block 9002-88-4, Polyethylene 9003-07-0, Polypropylene 9010-79-1

RL: USES (Uses)

(polyolefin blends, contg. crosslinked fiber-reinforced alkoxysilane-grafted polyolefins, molded, with improved bending strength and heat resistance)

IT 25038-36-2, Ethylene-ethylidenenorbornene-propylene copolymer

RL: USES (Uses)

(rubber, polyolefin blends, contg. crosslinked fiber-reinforced alkoxysilane-grafted polyolefins, moldable, for improved bending strength and heat resistance)

HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1)1

L17 23 ANSWERS CA COPYRIGHT 2003 ACS

IC ICM B29C047-24

ICS B29C035-02; B29D023-00; B29K101-12; B29K105-12; B29K105-24; B29L023-00

CC 38-2 (Plastics Fabrication and Uses)

TI Manufacture of fiber-reinforced plastic tubes with high rigidity and increased tensile strength

ST plastic tube fiber reinforced extrusion; ethylene polymer tube glass fiber reinforced; app extrusion fiber reinforced plastic tube; rigidity fiber reinforced ethylene polymer tube; tensile strength fiber reinforced plastic tube; pipe fiber reinforced plastic tube; pole fiber reinforced plastic tube

IT Polymer blends

RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM (Technical or engineered material use); PROC (Process); USES (Uses) (HDPE-1,2-butadiene rubber blends; manuf. of fiber-reinforced plastic tubes with high rigidity and increased tensile strength)

IT Glass fibers, uses

RL: MOA (Modifier or additive use); PRP (Properties); USES (Uses) (ethylene polymers reinforced with; manuf. of fiber-reinforced plastic tubes with high rigidity and increased tensile strength)

IT Reinforced plastics

RL: PEP (Physical, engineering or chemical process); POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); PROC (Process); USES (Uses) (fiber-reinforced; manuf. of fiber-reinforced plastic tubes with high rigidity and increased tensile strength)

IT Crosslinking

Extrusion apparatus for plastics and rubbers

Extrusion of plastics and rubbers

Pipes and Tubes

(manuf. of fiber-reinforced plastic tubes with high rigidity and increased tensile strength)

IT Butadiene rubber, uses

RL: PEP (Physical, engineering or chemical process); POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); PROC (Process); USES (Uses) (of 1,2-configuration, JSR RB 830, blends with HDPE; manuf. of fiber-reinforced plastic tubes with high rigidity and increased tensile strength)

IT 9003-17-2

RL: PEP (Physical, engineering or chemical process); POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); PROC (Process); USES (Uses)

(1,2-Butadiene rubber, JSR RB 830, blends with HDPE; manuf. of fiber-reinforced plastic tubes with high rigidity and increased tensile strength)

IT 9002-88-4, HJ 560W

RL: PEP (Physical, engineering or chemical process); POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); PROC (Process); USES (Uses)

(blends with butadiene rubber, manuf. of fiber-reinforced plastic tubes with high rigidity and increased tensile strength)

IT **107257-99-8, Linklon HM 600A**

RL: PEP (Physical, engineering or chemical process); POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); PROC (Process); USES (Uses)

(glass fiber-reinforced; manuf. of fiber-reinforced plastic tubes with high rigidity and increased tensile strength)

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L17 23 ANSWERS CA COPYRIGHT 2003 ACS

CC 36 (Plastics Manufacture and Processing)

TI Castable resins for airplane construction

ST airplane construction resins; resins airplane construction; castable resins; glass fiber resins; hardeners resins; adhesives; epoxy resins

IT Aircraft

(castable resins for construction of)

IT Plastics, reinforced

RL: USES (Uses)

(glass fiber, in aircraft construction)

IT Plastics, laminated

RL: USES (Uses)

(in aircraft construction)

IT Fiber, glass, uses and miscellaneous

RL: USES (Uses)

(plastics reinforced by, in aircraft construction)

HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1)1

L17 23 ANSWERS CA COPYRIGHT 2003 ACS

IC ICM C08G059-68

ICS B32B027-00; C08J005-24

ICA B32B015-08; B32B027-04; B32B027-08; B32B027-38; C08J007-14; H05K003

CC 38-3 (Plastics Fabrication and Uses)

Section cross-reference(s): 76

TI Composite laminated sheets

ST laminated dielec sheet moisture resistant; Sholex composite laminated sheet; silane modified polyethylene epoxy laminate; Epikote 1046 composite laminated sheet; octyltin maleate composite laminated sheet; copper clad composite laminated sheet

IT Epoxy resins, uses and miscellaneous

RL: TEM (Technical or engineered material use); USES (Uses)

(prepregs, laminates with silane-modified polyethylene, for elec. app.)

IT Dielectric loss

(silane-modified polyethylene-epoxy resin prepreg laminates insulation with reduced)

IT Heat-resistant materials

Waterproof materials and Water-repellent materials

(silane-modified polyethylene-epoxy resin prepreg laminates, for elec. app.)

IT Electric insulators and Dielectrics

(silane-modified polyethylene-epoxy resin prepreg laminates, moisture-resistant, with low dielec. loss at high frequencies)

IT Crosslinking catalysts

(silanol condensation, epoxy resin prepregs contg., for laminates with silane-modified polyethylene films)

IT Electric circuits

(printed, boards, silane-modified polyethylene-epoxy resin prepreg laminates, moisture-resistant, with low dielec. loss at high frequencies)

IT 683-18-1 1067-55-6 1118-46-3 16091-18-2 51590-67-1

RL: CAT (Catalyst use); USES (Uses)

(catalysts, epoxy prepregs contg., laminates with silane-modified polyethylene films, for elec. app.)

IT 7440-50-8, uses and miscellaneous

RL: TEM (Technical or engineered material use); USES (Uses)

(foil, laminates with silane-modified polyethylene and epoxy resin prepregs, for printed circuit boards)

IT **29503-87-5 35312-82-4**

RL: TEM (Technical or engineered material use); USES (Uses)

(graft, laminates with epoxy resin prepregs contg. silanol condensation catalysts, for elec. app.)

IT 82446-34-2 88813-74-5

RL: TEM (Technical or engineered material use); USES (Uses)

(prepregs, laminates with silane-modified polyethylene, for elec. app.)

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L17 23 ANSWERS CA COPYRIGHT 2003 ACS

CC 9-10 (Biochemical Methods)

Section cross-reference(s): 13

TI Immunoturbidimetry of urinary albumin: prevention of adsorption of

albumin; influence of other urinary constituents

ST urine albumin detn; immunoturbidimetry albumin detn; adsorption albumin test tube Triton

IT Urine analysis

(albumin detn. in, of humans by immunoturbidimetry, adsorption problem and urine compn. effect in relation to)

IT Albumins, analysis

RL: ANT (Analyte); ANST (Analytical study)

(detn. of, in human urine by immunoturbidimetry, adsorption problem and urine compn. effect in relation to)

IT Adsorption

(of human serum albumin, to test tubes, Triton X 100 for prevention of)

IT Immunochemical analysis

(immunoturbidimetry, for albumins, of human urine, adsorption problem and urine compn. effect in relation to)

IT Laboratory ware

(test tubes, human serum albumin binding to, Triton X 100 for prevention of, in immunoturbidimetric assay)

IT 9002-93-1, Triton X 100

RL: ANST (Analytical study)

(human serum albumin binding to test tubes prevention by, in immunoturbidimetric assay)

HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1)1

L17 23 ANSWERS CA COPYRIGHT 2003 ACS

IC ICM B32B003-16

ICS B32B007-12; B41M031-00; C09J005-06

NCL 428195000

CC 38-3 (Plastics Fabrication and Uses)

TI Plastic heat-activated adhesive labels for bottles

ST adhesive label glass bottle; pressure sensitive heat activated adhesive label; water resistant plastic bottle label

IT Polyesters, uses

RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)

(base film; plastic heat-activated pressure-sensitive adhesive labels contg.)

IT Labels

(plastic heat-activated pressure-sensitive adhesive labels)

IT Bottles

(plastic heat-activated pressure-sensitive adhesive labels for)

IT 108-31-6D, Maleic anhydride, EVA modified with 24937-78-8D, Ethylene-vinyl acetate copolymer, maleated 41525-41-1, Escor ATX-320 262364-59-0, Aqua-Link KL 610 262364-60-3, Fusabond MC 190D

RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)

(adhesive; plastic heat-activated pressure-sensitive adhesive labels contg.)

IT 9002-88-4, Polyethylene

RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)

(base film of blended high- and low-d.; plastic heat-activated pressure-sensitive adhesive labels contg.)

IT 9003-07-0, Polypropylene 25038-59-9, Mylar 92D, uses 25038-59-9, uses 25640-14-6, Kodar 6763 262364-56-7, Mylar M 34

RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)

(base film; plastic heat-activated pressure-sensitive adhesive labels contg.)

HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1)1

L17 23 ANSWERS CA COPYRIGHT 2003 ACS

CC 42-8 (Coatings, Inks, and Related Products)

TI Methods and results of studies of the suitability of powder epoxy resins for coating electronic and electrical subcomponents

ST epoxy resin powder coating; elec component coating epoxy

IT Electric insulators and Dielectrics

(epoxy coatings as, testing of)

IT Coating materials

(epoxy, for elec. components, testing of)

IT 66257-43-0 66257-44-1 66257-45-2 66269-51-0

RL: TEM (Technical or engineered material use); USES (Uses)

(coatings, for elec. components, testing of)

HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1)1

L17 23 ANSWERS CA COPYRIGHT 2003 ACS

IC ICM B32B027-00

ICA B32B015-08; B32B027-04; B32B027-38; H05K001-03

CC 38-3 (Plastics Fabrication and Uses)

TI Composite resin laminates

ST ethylene vinyltriethoxysilane copolymer laminate; epoxy resin prepreg laminate; elec circuit resin laminate

IT Paper

Glass fibers, uses and miscellaneous

RL: USES (Uses)

(epoxy resin prepregs contg., laminates with copper and ethylene-triethoxyvinylsilane copolymer, with good dielec. properties at high frequency)

IT Epoxy resins, uses and miscellaneous

RL: USES (Uses)

(prepregs, contg. glass fibers, laminates with copper and ethylene-triethoxyvinylsilane copolymer, with good dielec. properties at high frequency)

IT Phenolic resins, uses and miscellaneous

(epoxy-, prepregs, contg. glass fibers, for laminates with copper and ethylene-triethoxyvinylsilane copolymer, with good dielec. properties at high frequency)

IT Epoxy resins, uses and miscellaneous

RL: USES (Uses)

(phenolic, prepregs, contg. glass fibers, for laminates with copper and ethylene-triethoxyvinylsilane copolymer, with good dielec. properties at high frequency)

IT Electric circuits

(printed, boards, copper-ethylene-triethoxyvinylsilane-epoxy resin prepreg laminates for)

IT 7440-02-0, uses and miscellaneous 7440-50-8, uses and miscellaneous

RL: USES (Uses)

(foils, laminates with ethylene-triethoxyvinylsilane copolymer and epoxy resin prepregs, with good dielec. properties at high frequency)

IT 29503-87-5

RL: USES (Uses)

(laminates with copper and epoxy resin prepregs, with good dielec. properties at high frequency)

IT 1319-77-3D, polymers with epoxides and formaldehyde 88813-74-5

RL: USES (Uses)

(prepregs, contg. brominated epoxy resin and glass fibers, laminates with copper and ethylene-triethoxyvinylsilane copolymer, with good dielec. properties at high frequency)

IT 82446-34-2

RL: USES (Uses)

(prepregs, contg. cresol novolak epoxy resin and glass fibers, laminates with copper and ethylene-triethoxyvinylsilane copolymer, with good dielec. properties at high frequency)

HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1)1

L17 23 ANSWERS CA COPYRIGHT 2003 ACS

IC ICM B32B027-32

ICS B29C065-52; B29C065-70

ICI B29K023-00, B29L023-22

CC 38-3 (Plastics Fabrication and Uses)

TI Polyolefin pipe connection

ST polyolefin pipe connection pressure resistance; ethylene vinyltrimethoxysilane graft copolymer pipe; polishing polyolefin pipe connection; flame treatment polyolefin pipe connection

IT Polishing

(of polyolefin pipes, for jointing)

IT Pipes and Tubes

(of polyolefins, adhesives for joints of, epoxy, urethane, silicone, and cyanoacrylates as)

IT Flame

(polyolefin pipes treated with, for jointing)

IT Glass fibers, uses and miscellaneous

RL: USES (Uses)

(textiles, tapes, impregnated with epoxy resins, for polyolefin pipe joints)

IT 25068-38-6 107497-57-4, Aron Alpha 232 116094-61-2 116095-10-4

RL: TEM (Technical or engineered material use); USES (Uses)

(adhesives, for polyolefin pipe joints)

STN Columbus

IT 107257-99-8, Ethylene-vinyltrimethoxysilane

graft copolymer

RL: USES (Uses)

(pipes, adhesives for joints of, epoxy, urethane, silicone, and cyanoacrylates as)

HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1)1

L17 23 ANSWERS CA COPYRIGHT 2003 ACS

IC ICM B32B007-10

ICS B32B027-30; B32B027-32

NCL 428335000

CC 38-3 (Plastics Fabrication and Uses)

TI Printable multilayer adhesive films for glass substrates

ST adhesive label multilayer glass bottle; block resistance adhesive film

IT Polysiloxanes, uses

RL: TEM (Technical or engineered material use); USES (Uses)
(adhesives; printable multilayer adhesive films for glass substrates)

IT Polyesters, uses

RL: TEM (Technical or engineered material use); USES (Uses)
(base film; printable multilayer adhesive films for glass substrates)

IT Bottles

(glass; printable multilayer adhesive films for glass substrates)

IT Polyesters, uses

RL: TEM (Technical or engineered material use); USES (Uses)
(oriented, base films; printable multilayer adhesive films for glass substrates)

IT Adhesive films

Adhesives

Labels

(printable multilayer adhesive films for glass substrates)

IT Glass, miscellaneous

RL: MSC (Miscellaneous)

(printable multilayer adhesive films for glass substrates)

IT 9003-07-0, Polypropylene

RL: TEM (Technical or engineered material use); USES (Uses)
(AA 25, oriented, base film; printable multilayer adhesive films for glass substrates)

IT 41525-41-1, Escor ATX 320

RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(adhesive; printable multilayer adhesive films for glass substrates)

IT 24937-78-8D, Ethylene-vinyl acetate copolymer, maleated 262364-60-3,

Fusabond MC 190D 298688-43-4, Aqua-Link K 1610

298688-52-5, Mylar 75LBT 298688-87-6

RL: TEM (Technical or engineered material use); USES (Uses)
(adhesive; printable multilayer adhesive films for glass substrates)

IT 7631-86-9, Silica, uses

RL: MOA (Modifier or additive use); USES (Uses)
(antiblock agent; printable multilayer adhesive films for glass substrates)

IT 9002-88-4 25038-59-9, Mylar 92D, uses 25038-59-9, Mylar 92D, uses

25640-14-6, Kodar 6763 262364-56-7, Mylar M 34

RL: TEM (Technical or engineered material use); USES (Uses)
(base film; printable multilayer adhesive films for glass substrates)

IT 108-31-6D, Maleic anhydride, reaction products with EVA 115-07-1D,

Propylene, copolymers 24937-78-8, Elvax 3175

RL: TEM (Technical or engineered material use); USES (Uses)
(printable multilayer adhesive films for glass substrates)

HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1)1

L17 23 ANSWERS CA COPYRIGHT 2003 ACS

IC C08J005-24; B29D003-02; B32B015-08

CC 37-2 (Plastics Fabrication and Uses)

Section cross-reference(s): 76

TI Copper foil laminates with electric insulators

ST silane grafted polyethylene film; copper elec insulator laminate; glass fiber polyethylene laminate; butyltin laurate crosslinking catalyst

IT Crosslinking catalysts

(dibutyltin dilaurate, for vinylsilane-grafted polyethylene-glass fiber laminates for elec. insulators)

IT Glass fibers, uses and miscellaneous

RL: USES (Uses)

(laminates with vinylsilane-grafted polyethylene, for elec. insulators)

IT Electric insulators and Dielectrics

(vinylsilane-grafted polyethylene laminates with glass fibers)

IT 77-58-7

RL: CAT (Catalyst use); USES (Uses)

(catalysts, for crosslinking of vinylsilane-grafted polyethylene-glass fiber laminate elec. insulators)

IT 7440-50-8, uses and miscellaneous

RL: USES (Uses)

(foils, laminates with vinylsilane-grafted polyethylene and glass fibers)

IT 35312-82-4

RL: USES (Uses)

(graft, laminates with tin compd.-coated glass fabrics, for elec. insulators)

ALL ANSWERS HAVE BEEN SCANNED

=> d his

(FILE 'HOME' ENTERED AT 17:49:37 ON 07 MAR 2003)

FILE 'REGISTRY' ENTERED AT 17:49:46 ON 07 MAR 2003

L1 58276 S (POLYMER OR COPOLYMER) AND (ETHYLENE OR ETHEN

L2 7536 S L1 AND VINYL

L3 394 S L2 AND SILAN?

L4 175 S L2 AND(ETHENYLTRIMETHOXYSILANE OR

ETHENYLTRIETHOXYSILANE OR E

L5 501 S L1 AND(ETHENYLTRIMETHOXYSILANE OR

ETHENYLTRIETHOXYSILANE OR E

L6 486 S ETHENE AND(ETHENYLTRIMETHOXYSILANE OR

ETHENYLTRIETHOXYSILANE

L7 125 S L6 NOT (TRIFL? OR ACID)

L8 86 S L7 NOT(DIFLUOR? OR HEXAFLUOR? OR TETRAFLUOR?)

L9 48 S L8 NOT (CHLOR? OR PROP? OR BUTADI? OR OXACYCL?)

L10 39 S L9 NOT(OXA? OR INDEN? OR PENT?)

L11 29 S L10 NOT(OCTA? OR BUTE?)

L12 22 S L11 NOT(FURAN? OR PHEN? OR DIMETHOXYDIME?)

L13 9 S L12 NOT(HYDRO? OR OCTE? OR HEXEN?)

L14 5 S L13 NOT(ETHENOL OR TRIETHOXYHEX? OR ETHENESUL? O

ETHENYLBEN?

L15 4 S L14 NOT 2551

SEL NAME L15

FILE 'CA' ENTERED AT 18:11:03 ON 07 MAR 2003

L16 664 S L15 OR E1-29

L17 23 S L16 AND GLASS

=> s l16 and(microtiter or microtitre or microplate or multiwell or multi well or terasaki)

6652 MICROTITER

248 MICROTITRE

1995 MICROPLATE

875 MICROPLATES

2573 MICROPLATE

(MICROPLATE OR MICROPLATES)

509 MULTIWELL

19 MULTIWELLS

526 MULTIWELL

(MULTIWELL OR MULTIWELLS)

83865 MULTI

1 MULTIS

83866 MULTI

(MULTI OR MULTIS)

1327207 WELL

60405 WELLS

1347979 WELL

(WELL OR WELLS)

318 MULTI WELL

(MULTI(W)WELL)

73 TERASAKI

L18 0 L16 AND(MICROTITER OR MICROTITRE OR MICROPLATE OR

MULTIWELL OR

MULTI WELL OR TERASAKI)

STN Columbus

=> s l16 and silica?
545874 SILICA?
L19 17 L16 AND SILICA?

=> s l16 and borosilic?
19704 BOROSILIC?
L20 0 L16 AND BOROSILIC?

=> d his

(FILE 'HOME' ENTERED AT 17:49:37 ON 07 MAR 2003)

FILE 'REGISTRY' ENTERED AT 17:49:46 ON 07 MAR 2003

L1 58276 S (POLYMER OR COPOLYMER) AND (ETHYLENE OR ETHENE)
L2 7536 S L1 AND VINYL
L3 394 S L2 AND SILAN?
L4 175 S L2 AND(ETHENYLTRIMETHOXYSILANE OR
ETHENYLTRIETHOXYSILANE OR E
L5 501 S L1 AND(ETHENYLTRIMETHOXYSILANE OR
ETHENYLTRIETHOXYSILANE OR E
L6 486 S ETHENE AND(ETHENYLTRIMETHOXYSILANE OR
ETHENYLTRIETHOXYSILANE
L7 125 S L6 NOT (TRIFL? OR ACID)
L8 86 S L7 NOT(DIFLUOR? OR HEXAFLUOR? OR TETRAFLUOR?)
L9 48 S L8 NOT (CHLOR? OR PROP? OR BUTADI? OR OXACYCL?)
L10 39 S L9 NOT(OXA? OR INDEN? OR PENT?)
L11 29 S L10 NOT(OCTA? OR BUTE?)
L12 22 S L11 NOT(FURAN? OR PHEN? OR DIMETHOXYDIME?)
L13 9 S L12 NOT(HYDRO? OR OCTE? OR HEXEN?)
L14 5 S L13 NOT(ETHENOL OR TRIETHOXYHEX? OR ETHENESUL? OR
ETHENYLBEN?
L15 4 S L14 NOT 2551
SEL NAME L15

FILE 'CA' ENTERED AT 18:11:03 ON 07 MAR 2003

L16 664 S L15 OR E1-29
L17 23 S L16 AND GLASS
L18 0 S L16 AND(MICROTITER OR MICROTITRE OR MICROPLATE OR
MULTIWELL O
L19 17 S L16 AND SILICA?
L20 0 S L16 AND BOROSILIC?

=> del l1 l2 l3 l4 l5 y renum
L-NUMBERS REASSIGNED. ENTER 'DIS HIST' TO SEE CURRENT
ASSIGNMENT

=> d his

(FILE 'HOME' ENTERED AT 17:49:37 ON 07 MAR 2003)

FILE 'REGISTRY' ENTERED AT 17:49:46 ON 07 MAR 2003

L1 486 S ETHENE AND(ETHENYLTRIMETHOXYSILANE OR
ETHENYLTRIETHOXYSILANE
L2 125 S L1 NOT (TRIFL? OR ACID)
L3 86 S L2 NOT(DIFLUOR? OR HEXAFLUOR? OR TETRAFLUOR?)
L4 48 S L3 NOT (CHLOR? OR PROP? OR BUTADI? OR OXACYCL?)
L5 39 S L4 NOT(OXA? OR INDEN? OR PENT?)
L6 29 S L5 NOT(OCTA? OR BUTE?)
L7 22 S L6 NOT(FURAN? OR PHEN? OR DIMETHOXYDIME?)
L8 9 S L7 NOT(HYDRO? OR OCTE? OR HEXEN?)
L9 5 S L8 NOT(ETHENOL OR TRIETHOXYHEX? OR ETHENESUL? OR
ETHENYLBEN?
L10 4 S L9 NOT 2551
SEL NAME L10

FILE 'CA' ENTERED AT 18:11:03 ON 07 MAR 2003

L11 664 S L10 OR E1-29
L12 23 S L11 AND GLASS
L13 0 S L11 AND(MICROTITER OR MICROTITRE OR MICROPLATE OR
MULTIWELL O
L14 17 S L11 AND SILICA?
L15 0 S L11 AND BOROSILIC?

=> s l12,l14

L16 39 (L12 OR L14)

=> d his

(FILE 'HOME' ENTERED AT 17:49:37 ON 07 MAR 2003)

FILE 'REGISTRY' ENTERED AT 17:49:46 ON 07 MAR 2003

L1 486 S ETHENE AND(ETHENYLTRIMETHOXYSILANE OR
ETHENYLTRIETHOXYSILANE
L2 125 S L1 NOT (TRIFL? OR ACID)
L3 86 S L2 NOT(DIFLUOR? OR HEXAFLUOR? OR TETRAFLUOR?)
L4 48 S L3 NOT (CHLOR? OR PROP? OR BUTADI? OR OXACYCL?)
L5 39 S L4 NOT(OXA? OR INDEN? OR PENT?)
L6 29 S L5 NOT(OCTA? OR BUTE?)
L7 22 S L6 NOT(FURAN? OR PHEN? OR DIMETHOXYDIME?)
L8 9 S L7 NOT(HYDRO? OR OCTE? OR HEXEN?)
L9 5 S L8 NOT(ETHENOL OR TRIETHOXYHEX? OR ETHENESUL? OR
ETHENYLBEN?
L10 4 S L9 NOT 2551
SEL NAME L10

FILE 'CA' ENTERED AT 18:11:03 ON 07 MAR 2003

L11 664 S L10 OR E1-29
L12 23 S L11 AND GLASS
L13 0 S L11 AND(MICROTITER OR MICROTITRE OR MICROPLATE O
MULTIWELL O
L14 17 S L11 AND SILICA?
L15 0 S L11 AND BOROSILIC?
L16 39 S L12,L14

=> d bib,ab 1-39

L16 ANSWER 1 OF 39 CA COPYRIGHT 2003 ACS

[Full Text](#)

AN 137:109594 CA

TI Study on graft reactions of polyethylenes with silanes

AU Shen, Jing-wei; Ye, Nan-biao; Zuo, Sheng-wu

CS College of Polymer Sci. and Eng., Sichuan Univ., Chengdu, 610065, Peop.
Rep. China

SO Sichuan Daxue Xuebao, Gongcheng Kexueban (2002), 34(1), 6-10

CODEN: SXGKFI; ISSN: 1009-3087

PB Sichuan Daxue Xuebao, Gongcheng Kexueban Bianjibu

DT Journal

LA Chinese

AB The graft reactions of HDPE and LLDPE with vinyl triethoxysilane (VTEOS) or vinyl trimethoxysilane (VT-MOS), initiated by dicumyl peroxide (DCP) or 2,5-dimethy-2,5-bis(tert-butyldioxy)-3-hexyne (DMTBH), were studied by means of FTIR and DSC. The activation energies (Ea) of different systems with varied combination of the reactants were detd. The decompn. behavior (decompn. temp. and speed) of the initiators, the reactive activity of the silanes, the melting behavior (m.p.) and reactive ability of the PEs are dominant factors of deciding the graft reaction characteristics (temp. range, reaction speed, grafted extent etc.). The Ea of graft reaction of HDPE or LLDPE with VTEOS, initiated by DCP, is 190, 160 kJ/mol resp., and that of HDPE with VT-MOS is 175 kJ/mol. The differences in graft reaction characteristics of varied combination systems can be explained by the differences in mol. structure of the reactants and in Ea.

L16 ANSWER 2 OF 39 CA COPYRIGHT 2003 ACS

[Full Text](#)

AN 136:326359 CA

TI Composite materials of resins and stratified silicates and production methods therefor

IN Iwasa, Koichiro; Ueda, Naoki; Atsumu, Hiroki

PA Sekisui Chemical Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 9 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI JP 2002121397	A2	20020423	JP 2000-314015	20001013
PRAI JP 2000-314015		20001013		

AB Composites contain 100 parts cryst. resins and silicates having interlaminar distance >6 nm detd. by X-ray diffraction and 0.1-10 parts rosin or sorbitol nucleating agents. Thus, a sheet contained EA 9 85, MAE 100 (mica) 5, Youmex 1001 10, and KM 1500 0.5 part.

L16 ANSWER 3 OF 39 CA COPYRIGHT 2003 ACS

[Full Text](#)

AN 136:88420 CA

STN Columbus

TI Manufacture of solar cell modules
 IN Kitagawa, Masaki
 PA Mitsubishi Chemical Corp., Japan
 SO Jpn. Kokai Tokkyo Koho, 7 pp.
 CODEN: JKXXAF

DT Patent
 LA Japanese
 FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2002009309	A2	20020111	JP 2000-190559	20000626
PRAI JP 2000-190559		20000626		

AB Manuf. of the modules comprising solar cell elements placed in between front and back coverings includes insertion of an ethylenically unsatd. silane compd.-modified olefin polymer sheet in between the front covering and the solar cell element followed by their heat lamination. The sheets are olefin polymers modified with $R_1SiR_2nY_3-n$ (R_1 = ethylenically unsatd. hydrocarbon, hydrocarboxy group; R_2 = hydrocarbon group; Y = hydrolyzable org. group; n = integer of 0-2), contains ≤ 0.001 wt.% radical generator, and has $\geq 30\%$ gelation degree. The coverings are strongly adhered to the elements.

L16 ANSWER 4 OF 39 CA COPYRIGHT 2003 ACS

Full Text
 AN 133:268023 CA
 TI Printable multilayer adhesive films for glass substrates
 IN Kelch, Robert H.; Tung, Harvey C.
 PA The Dow Chemical Company, USA
 SO U.S., 7 pp.
 CODEN: USXXAM

DT Patent
 LA English
 FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI US 6127032	A	20001003	US 1997-998126	19971224
PRAI US 1997-998126		19971224		

AB The printable film, particularly useful for labels for glass substrates such as glass bottles, comprises a base layer (e.g., polyvinylidene chloride-coated oriented polyethylene terephthalate film), an adhesive layer contg. a heat-activated thermoplastic adhesive [e.g., Escor ATX 320 (acrylic acid-ethylene-Me acrylate copolymer)] which is not tacky at room temp., and optionally an intermediate layer to improve interlayer bonding between the base layer and the adhesive layer. The films are sufficiently nonblocking at room temp. so as to not require the use of a sep. release liner. Labels made from films are thermally adhered to glass substrates and show good adhesion to glass substrates to withstand washing/rinsing, filling, and pasteurization processes utilized in the bottling industry.

RE.CNT 47 THERE ARE 47 CITED REFERENCES AVAILABLE FOR THIS RECORD

ALL CITATIONS AVAILABLE IN THE RE FORMAT

L16 ANSWER 5 OF 39 CA COPYRIGHT 2003 ACS

Full Text
 AN 132:252083 CA
 TI Plastic heat-activated adhesive labels for bottles
 IN Kelch, Robert H.; Tung, Harvey C.
 PA The Dow Chemical Company, USA
 SO U.S., 7 pp.
 CODEN: USXXAM

DT Patent
 LA English
 FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI US 6042930	A	20000328	US 1997-998125	19971224
PRAI US 1997-998125		19971224		

AB A multilayer film useful for making plastic adhesive labels for glass substrates such as glass bottles. The multilayer films contain a base layer, an adhesive layer, and optionally an intermediate layer to improve interlayer bonding between the base layer and the adhesive layer. The adhesive layer comprises a heat-activated thermoplastic adhesive that is not tacky at room temp. Films are sufficiently non blocking at room temp. so as to not require the use of a sep. release liner. The film can be used in conventional graphics printing operations and made into labels. Labels can be thermally adhered to glass substrates and exhibit sufficient adhesion to glass substrates to withstand washing/rinsing, filling, and pasteurization processes used in the bottling industry.

RE.CNT 52 THERE ARE 52 CITED REFERENCES AVAILABLE FOR THIS RECORD

ALL CITATIONS AVAILABLE IN THE RE FORMAT

L16 ANSWER 6 OF 39 CA COPYRIGHT 2003 ACS

Full Text
 AN 132:50438 CA

TI Post-reactor process for treating polymers prepared in a gas phase polymerization in the presence of an inert particulate material
 IN Eisinger, Ronald Steven; Hussein, Fathi David; Jones, David Nunn; Raether, Ronald Irvin; Rebhan, David Merrill; Welch, Joseph Patrick; Williams, Gary Harry
 PA Union Carbide Chemicals & Plastics Technology Corporation, USA
 SO PCT Int. Appl., 48 pp.
 CODEN: PIXXD2

DT Patent
 LA English
 FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO 9965953	A1	19991223	WO 1999-US13402	19990614

W: AL, AU, BA, BB, BG, BR, CA, CN, CU, CZ, EE, GE, HU, ID, IL, IS, JP, KR, KZ, LC, LK, LR, LT, LV, MG, MK, MN, MX, NO, NZ, PL, RO, RU, SG, SI, SK, SL, TR, TT, UA, UZ, VN, YU, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
 RW: GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG
 US 6214903 B1 20010410 US 1998-98479 19980616
 AU 9946826 A1 20000105 AU 1999-46826 19990614
 BR 9911232 A 20010306 BR 1999-11232 19990614
 EP 1088006 A1 20010404 EP 1999-930248 19990614
 R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, NL, SE, MC, PT
 JP 2002518528 T2 20020625 JP 2000-554776 19990614
 PRAI US 1998-98479 A 19980616
 WO 1999-US13402 W 19990614

AB A post-reactor process for improving the robustness of a polymer particle contg. at least 0.3% of an inert particulate material and contg. unreacted monomer comprises: introducing the polymer contg. the inert particulate material and unreacted monomer into a polishing vessel wherein the polymer is fluidized using an inert gas; the temp. of the polymer ranges from about 20 to 100°; the temp. of a fluidizing gas ranges from about 20 to 150°; the temp. of the polishing vessel ranges from about 50 to 100°; the pressure in the polishing vessel ranges from -2 psi to 50 psi; the superficial gas velocity ranges from about 0.6 to 3 ft/s; and the residence time for the polymer ranges from about 15 min to 8 h.

RE.CNT 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD

ALL CITATIONS AVAILABLE IN THE RE FORMAT

L16 ANSWER 7 OF 39 CA COPYRIGHT 2003 ACS

Full Text
 AN 131:130969 CA
 TI Transparent gas-barrier laminated packaging film with improved flexibility
 IN Yoshinaga, Masanobu
 PA Toppan Printing Co., Ltd., Japan
 SO Jpn. Kokai Tokkyo Koho, 4 pp.
 CODEN: JKXXAF

DT Patent
 LA Japanese
 FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 11207855	A2	19990803	JP 1998-14281	19980127
PRAI JP 1998-14281		19980127		

AB The film, useful as packaging film for foods, pharmaceuticals, electronic parts, etc., comprises a polymer base film, an inorg. oxide vapor-deposited layer, and a polyvinylalkoxysilane hydrolyzate coating layer, laminated in this order. Thus, PET-SiO₂ base film was coated with a mixt. of an aq. HCl soln. and a Me₂CO soln. of vinyltriethoxysilane-ethylene copolymer to give a laminated film showing O permeability (at 20° and 60% relative humidity) 0.3, and 0.4 cm³/m²-24 h-atm, initially, and after 10% elongation test, resp.

L16 ANSWER 8 OF 39 CA COPYRIGHT 2003 ACS

Full Text
 AN 130:253139 CA

TI Crosslinking of polyolefins using silane coupling agents

STN Columbus

IN Kawai, Tamio; Ohtani, Hirofumi
 PA Yazaki Corp., Japan
 SO Jpn. Kokai Tokkyo Koho, 5 pp.
 CODEN: JKXXAF

DT Patent
 LA Japanese
 FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 11060748	A2	19990305	JP 1997-229626	19970826
JP 3290386	B2	20020610		
PRAI JP 1997-229626		19970826		

AB Polyolefins are mixed with a part of master batches impregnated with silane coupling agents, crosslinking agents, catalysts, and hydrophobic modifiers, heated and molded for bonding the coupling agents with the polyolefins, followed by polycondensation of the coupling agents with H₂O. Thus, 100 parts F 31 (LDPE) and 10 parts master batch contg. W 1010 (LDPE), SZ 6072 (vinyltriethoxysilane), dicumyl peroxide, BT 11 (dibutyltin dilaurate), and KR-TTS (isopropyltriisostearoyl titanate) were extruded and immersed in 90° water for 24 h to give a test piece showing crosslinking degree 71%.

L16 ANSWER 9 OF 39 CA COPYRIGHT 2003 ACS

[Full Text](#)

AN 130:25810 CA

TI Water-crosslinkable LLDPE-based impregnated resins and water-crosslinkable resin moldings

IN Oki, Yumi; Ishihara, Koji
 PA Nippon Unicar Co., Ltd., Japan
 SO Jpn. Kokai Tokkyo Koho, 8 pp.
 CODEN: JKXXAF

DT Patent
 LA Japanese
 FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 10316807	A2	19981202	JP 1997-145957	19970520
PRAI JP 1997-145957		19970520		

AB Title resins, useful for elec. insulating wires, etc., are those prepd. from granular linear-low-d. ethylene-a-olefin copolymers by (1) drying at 40-T° (T < m.p. of the copolymers) to remove water, (2) mixing with additives, for crosslinking with water, contg. unsatd. alkoxysilanes, org. peroxides, silanol-condensation catalysts, and antioxidants, and (3) heating at 40-T° for a period enough for the copolymers to be well impregnated with the additives. The moldings are those prepd. by grafting the compns. with the silanes in an extruder and contacting the resulting moldings with water for crosslinking. The copolymers are well impregnated with the additives so that the compns. can be kneaded well even in the presence of the alkoxysilanes (which have possibility to act like lubricants). Thus, polymg. 90 parts ethylene and 10 parts 1-butene in the presence of porous silica-supported polymn. catalysts in fluidized bed to give granular copolymer, drying the copolymer at 60° for 12 h, mixing the copolymer with vinyltrimethoxysilane (Y 9818) 1.7, dicumyl peroxide (Percumyl D) 0.06, dibutyltin dilaurate 0.05, and tetrakis[methylene-3-[3,5-di(tert-butyl)-4-hydroxyphenyl]propionato]methane (Irganox 1010) 0.12 part at 50°, stirring the mixt. at 60° for 30 min, and leaving the mixt. at 60° for 3 h gave title resin, which was extruded on a Cu wire then the wire was soaked in water at 80° for 12 h to give an elec. insulating wire having gel fraction 63%, tensile strength 10 MPa, and elongation 630%.

L16 ANSWER 10 OF 39 CA COPYRIGHT 2003 ACS

[Full Text](#)

AN 128:231261 CA

TI Manufacture of fiber-reinforced plastic tubes with high rigidity and increased tensile strength

IN Kanikaya, Koichi; Ito, Masayoshi
 PA Sekisui Chemical Co., Ltd., Japan
 SO Jpn. Kokai Tokkyo Koho, 6 pp.
 CODEN: JKXXAF

DT Patent
 LA Japanese
 FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 10058519	A2	19980303	JP 1996-221286	19960822
PRAI JP 1996-221286		19960822		

AB In the process of manuf. of fiber-reinforced plastic tubes with high rigidity by extruding compns. contg. reinforcing fibers and crosslinkable thermoplastic polymers (A) through a cylindrical fluid channel formed by an inner die and an outer die, the compns. are first passed through the fluid channel by rotating the inner die and/or the outer die around the axis of the fluid channel, subsequently passed through the fluid channel with the inner die and the outer die in the fixed state, and are finished to crosslink A. The tubes are useful for manuf. of pipes and poles (no data). A compn. contg. Linklon HM 600A (I; silane-crosslinkable polyethylene) 10% (on I) glass fibers was extruded at 180°, passed through a fluid channel by rotating the inner die, subsequently passed through the fluid channel without rotating the inner die and the outer die, cut, and heat-treated in H₂O at 80° to give a tube with tensile strength 54.4 MPa and tensile modulus 2.8 GPa.

L16 ANSWER 11 OF 39 CA COPYRIGHT 2003 ACS

[Full Text](#)

AN 127:82652 CA

TI Fiber-reinforced polyolefin laminated sheets with good mechanical and melt-adhesion properties, and manufacture thereof

IN Nakamura, Masanori
 PA Sekisui Chemical Co., Ltd., Japan
 SO Jpn. Kokai Tokkyo Koho, 7 pp.
 CODEN: JKXXAF

DT Patent
 LA Japanese
 FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 09174773	A2	19970708	JP 1995-336760	19951225
PRAI JP 1995-336760		19951225		

AB Title sheets, useful as substitutes for glass fiber-reinforced sheets, comprise a noncrosslinked polyolefin sheet (A) laminated on at least one side of an oriented crosslinked sheet made of the same polyolefins. The laminated sheets are manufd. by melt laminating the sheet A on either (or both) side(s) of a sheet made of latently crosslinkable polyolefins, orienting the laminates to form fiber structures, crosslinking the polyolefins, and heat treatment of the laminates at the m.p. of the polyolefins or higher under tension. Thus, 0.5 mm-thick two-layered laminate manufd. from MA3 (polypropylene, MI 11, mp. 163°) and 1:1 mixt. of MA3 and XPM 800H (crosslinkable silane group-contg. polypropylene, MI 11) showed tensile strength 1995 kg/cm², tensile modulus 19,870 kg/cm², and good melt adhesion properties.

L16 ANSWER 12 OF 39 CA COPYRIGHT 2003 ACS

[Full Text](#)

AN 127:51131 CA

TI Process for reduction of fouling in polymerization reactions in liquid phase

IN Joyce, William Helmer; Williams, Gary Harry
 PA Union Carbide Chemicals & Plastics Technology Corporation, USA
 SO Eur. Pat. Appl., 7 pp.
 CODEN: EPXXDW

DT Patent
 LA English
 FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI EP 773243	A1	19970514	EP 1996-307442	19961011
R: AT, BE, DE, ES, FR, GB, GR, IT, NL, PT, SE				
CA 2187469	AA	19970413	CA 1996-2187469	19961009
ZA 9608526	A	19970630	ZA 1996-8526	19961009
JP 09124732	A2	19970513	JP 1996-287359	19961011
CN 1157830	A	19970827	CN 1996-119266	19961011
BR 9605097	A	19980707	BR 1996-5097	19961011
PRAI US 1995-542351	A	19951012		

AB A slurry for a soln. process for polymn. of ³1 a-olefin and optionally, ³1 diolefin comprises (i) admixing a slurry or soln. of a-olefins and optional diolefins with an inert particulate material having a mean particle size of ~0.1-10 m in an amt. of ³0.3% based on the total wt. of the final polymer product produced; and (ii) contacting the mixt. formed in step (i) with a catalyst system adapted to polymerize the a-olefins and optional diolefins in the mixt. at a temp. and pressure sufficient to provide polymn. conditions.

L16 ANSWER 13 OF 39 CA COPYRIGHT 2003 ACS

[Full Text](#)

AN 124:58574 CA

STN Columbus

TI Olefin polymer moldings with good gas-barrier property for packaging materials
 IN Nakano, Tomomi; Egami, Masayuki; Deguchi, Jichio; Kitagawa, Masaki
 PA Mitsubishi Kagaku Kk, Japan
 SO Jpn. Kokai Tokkyo Koho, 6 pp.
 CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 07251474	A2	19951003	JP 1994-46123	19940316
PRAI JP 1994-46123		19940316		

AB Title moldings comprise silane-modified olefin polymers, with silane content 0.01-10%, obtained from ethylenically unsatd. silanes having hydrolyzable groups $\text{RSiR}'\text{nY}_3\text{-n}$ (R = ethylenically unsatd. hydrocarbyl, hydrocarbyloxy; R' = satd. aliph. group; Y = hydrolyzable org. group; n = 0, 1) and polyolefins or ethylene and coated with inorg. oxide thin films. Thus, melt kneading a propylene-vinyltrimethoxysilane graft copolymer, rolling, drawing, and depositing a SiO_2 thin film on the resulting film gave a test piece showing O permeability 5.0 mL/m²-atm-day.

L16 ANSWER 14 OF 39 CA COPYRIGHT 2003 ACS

Full Text

AN 123:316244 CA

TI Melt-processible moisture-curable ethylene copolymer hot-melt adhesives with improved adhesion at elevated temperatures

IN Case, Ronald Burton; Statz, Robert Joseph

PA du Pont de Nemours, E. I., and Co., USA

SO PCT Int. Appl., 22 pp.

CODEN: PIXXD2

DT Patent

LA English

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO 9516005	A1	19950615	WO 1994-US14001	19941206
			W: CA, JP	
			RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE	
CA 2176558	AA	19950615	CA 1994-2176558	19941206
EP 733089	A1	19960925	EP 1995-903683	19941206
EP 733089	B1	19980506		
			R: DE, FR, GB, IT, NL	
PRAI US 1993-163384		19931206		
WO 1994-US14001		19941206		

AB The adhesives comprise graft copolymers (A) consisting of reaction products of ethylene copolymers contg. 5-50% C1-8 alkyl (meth)acrylates or C1-8 alkyl vinyl ethers and 1-20% CO and vinylalkoxysilanes (B) and having B unit content 0.1-3.5%, and 0-0.5% (on A) silyl condensation catalysts and are useful in bonding glass or wood to PVC or polyesters. A polyester film was treated with a soln. contg. Irgastab T 634 (tin silyl condensation catalyst) and joined with glass using Bu acrylate-carbon monoxide-ethylene-trimethoxyvinylsilane graft copolymer to give a laminate exhibiting no failure at 140° by a specified shear adhesion failure temp. test.

L16 ANSWER 15 OF 39 CA COPYRIGHT 2003 ACS

Full Text

AN 123:230884 CA

TI Antifogging agricultural films

IN Kitagawa, Masaki; Oonishi, Shunichi; Sudo, Kyomaro; Mori, Masaya

PA Mitsubishi Kagaku Kk, Japan

SO Jpn. Kokai Tokkyo Koho, 7 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 07164607	A2	19950627	JP 1993-312199	19931213
PRAI JP 1993-312199		19931213		

AB The title films useful for greenhouses, etc., are made from (A) ethylene polymers graft-modified with $\text{RSiR}'\text{nY}_3\text{-n}$ (I ; R = ethylenically unsatd. hydrocarbyl, hydrocarbyloxy; R' = aliph. satd. hydrocarbyl; Y = hydrolyzable org. group; n = 0-1) or (B) copolymers of ethylene 80-99.9, I 0.1-10, and other vinyl comonomers 0-20% and are coated with antifogging agents selected from hydrophilic inorg. colloidal compds. and hydrophilic org. polymers for prolonging service life. Thus, inflation molding a

vinyltrimethoxysilane-grafted LDPE gave a film which was coated with a MeOH soln. of 75:25 2-hydroxyethyl methacrylate-methacrylic acid copolymer, colloidal SiO_2 , and polyoxyethylene lauryl ether to give a title film.

L16 ANSWER 16 OF 39 CA COPYRIGHT 2003 ACS

Full Text

AN 123:201311 CA

TI Plastic foam material composed of thermoplastic resin and silane-modified thermoplastic resin

IN Kobayashi, Tomoyuki; Miyazaki, Kenji; Nakamura, Masanori

PA Sekisui Kagaku Kogyo K. K., Japan

SO Eur. Pat. Appl., 64 pp.

CODEN: EPXXDW

DT Patent

LA English

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI EP 646622	A2	19950405	EP 1994-114897	19940921
EP 646622	A3	19961120		
EP 646622	B1	20001213		
			R: DE, ES, FR, GB, IT, NL	
CA 2132598	AA	19950322	CA 1994-2132598	19940921
AU 9474121	A1	19950413	AU 1994-74121	19940921
AU 692167	B2	19980604		
CN 1112582	A	19951129	CN 1994-117870	19940921
JP 08073640	A2	19960319	JP 1994-226764	19940921
JP 3169513	B2	20010528		
US 5552448	A	19960903	US 1994-309960	19940921
JP 08112873	A2	19960507	JP 1995-13564	19950131
US 5594038	A	19970114	US 1996-652277	19960522
US 5646194	A	19970708	US 1996-651519	19960522
PRAI JP 1993-235037	A	19930921		
JP 1994-147824	A	19940629		
JP 1994-188329	A	19940810		
JP 1994-9313	A	19940131		
JP 1994-188328	A	19940810		
JP 1994-198224	A	19940823		
US 1994-309960	A3	19940921		

AB A plastic foam mater. is composed of a blended resin compn. which includes 2 thermoplastic resins (substantially incompatible and substantially uncrosslinked thermoplastic resins, but need not be substantially incompatible) 100 and a saline-modified based resin 1-50, catalyst 0.001-2.5, and foaming agent 1-20 parts. The blended resin compn. may further include reinforcing agents such as glass fibers and filler. The resultant plastic foam mater. exhibits superior resilience, improved compression strength, and superior heat-insulating properties. Foam tubes (two layered mutually touching arranged in staggered fashion) made from blended high-d. polyethylene 50, polypropylene 50, and silane grafted polyethylene 20, and azodicarbonamide 1 part showed compression strength (25%) 3.23 kg/cm², compression permanent set (JIS K6767) 6.8, and heat cond. (JIS A1418) 0.03, vs. 1.40, 6.5, 0.03, resp., for tubes where adjacent outer layers are fused.

L16 ANSWER 17 OF 39 CA COPYRIGHT 2003 ACS

Full Text

AN 118:40141 CA

TI Preparation of heat-resistant inorganic compound-containing resins

IN Takada, Kuniaki; Tabata, Kazuaki

PA Tokuyama Soda Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 7 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 04159356	A2	19920602	JP 1990-284179	19901024
JP 2905588	B2	19990614		
PRAI JP 1990-284179		19901024		

AB The title resins are prepd. by hydrolysis of a mixt. contg. inorg. compds. and copolymers of unsatd. monomers and compds. bearing hydrolyzable and polymerizable groups. Thus, radical polymn. of 2000 g vinyl chloride with 120 g triethoxyvinylsilane in the presence of 30 g silica gave a polymer having no.-av. mol. wt. 55,000, which was kneaded with 4 phr Sn stabilizer, and pressed into a sheet. Immersing this sheet in 80° water for 1 day gave a sheet having tensile strength 510 and 150 kg/cm²,

at 25 and 100°, resp., vs. 500 and 100, resp., for sheets contg. no silica.

L16 ANSWER 18 OF 39 CA COPYRIGHT 2003 ACS

Full Text

AN 110:77026 CA

TI Moldings of silicon-containing polyolefins and silicone rubbers and their manufacture

IN Saito, Masayuki; Shimizu, Koji; Hamada, Mitsuo; Nakasuji, Katsuyoshi

PA Toray Silicone Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 11 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 63183843	A2	19880729	JP 1987-15652	19870126
JP 08029577	B4	19960327		
EP 276790	B1	19940629	EP 1988-101017	19880125

R: BE, DE, FR, GB

PRAI JP 1987-15652 19870126

AB The moldings with good adhesion and uniformity are prep'd. by grafting polyolefins with compds. having aliph. vinyl groups and Si-bonded hydrolyzable groups, molding the graft polymers, contacting with silicone rubbers optionally with precoat primers on the polymers, and curing.

Thus, a compn. of Hizex 100, CH₂:CHSi(OMe)₃ (SH 6300) 3, and dicumyl peroxide 0.1 part was heated at 200° for 0.5 h, compression-molded, and pressed to form a sheet. Placing the sheet in a mold, coating with a siloxane-titanate-silicate primer, injecting a rubber compn. of CH₂:CHSiMe₂-terminated polydimethylsiloxane, silica, and a Pt catalyst, and heating at 80° gave a molding with adhesion between the polymer sheet and the rubber 30 kg/cm₂.

L16 ANSWER 19 OF 39 CA COPYRIGHT 2003 ACS

Full Text

AN 109:94395 CA

TI Polyolefin pipe connection

IN Momose, Chiaki; Nakakawara, Kiyoshi; Matsui, Masaki

PA Mitsubishi Densen Kogyo K. K., Japan

SO Jpn. Kokai Tokkyo Koho, 6 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 63051136	A2	19880304	JP 1986-196824	19860821
PRAI JP 1986-196824		19860821		

AB Pipes are connected by polishing the surface, heat treating, coating with epoxy, urethane, silicone, and/or cyanoacrylate adhesive, winding polymer-impregnated fibrous materials, and curing the adhesives. Thus, 2 phr vinyltrimethoxysilane-grafted polyethylene was extruded to give a 60 mm-diam. pipe, polished the surface with no. 150 sandpaper, heated 2 s with a gas burner, coated with an epoxy adhesive, wound with an epoxy-impregnated glass fiber cloth tape, and cured the epoxy resin to give a joint having water pressure resistance (after 10 cycles of 30 min each at 95° and 20° with 5 kg/cm₂ pressure) 31 kg/cm₂, vs. 18 for the connection without polishing and flame treatment.

L16 ANSWER 20 OF 39 CA COPYRIGHT 2003 ACS

Full Text

AN 108:128015 CA

TI Immunoturbidimetry of urinary albumin: prevention of adsorption of albumin; influence of other urinary constituents

AU Bakker, A. J.

CS Dep. Clin. Chem., Stichting Klin. Chem. Lab., Leeuwarden, 8917 EN, Neth.

SO Clinical Chemistry (Washington, DC, United States) (1988), 34(1), 82-6

CODEN: CLCHAU; ISSN: 0009-9147

DT Journal

LA English

AB A simple, rapid immunoturbidimetric assay is described for low concns. of albumin in urine (2-260 mg/L). However, in this assay, human serum albumin (HSA) in the stds. binds nonspecifically to polystyrene or glass tubes. This nonspecific binding cannot be prevented by adding bovine serum albumin (BSA) to stds. because the anti-HSA antibody cross-reacts with BSA. Adding Triton X 100 (1 mL/L) to stds. effectively prevents this nonspecific binding of HSA from stds. to both polystyrene and glass

tubes. High concns. of compds. found in urine from normal and diabetic subjects do not interfere with this assay if pH extremes can be avoided. The between-day relative std. deviation is 4.8% at x = 18.8 mg/L and 2.0% at x = 183.1 mg/L. Measurements by this immunoturbidimetric method correlate well with those obtained by a radioimmunoassay and radial immunodiffusion. Urinary excretion of albumin by healthy, nondiabetic subjects was <8 mg/min.

L16 ANSWER 21 OF 39 CA COPYRIGHT 2003 ACS

Full Text

AN 108:39051 CA

TI Flame-retardant resin compositions

IN Hoshi, Kazuo; Nakagawa, Yoshio

PA Sumitomo Bakelite Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 6 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 62101644	A2	19870512	JP 1985-240532	19851029
PRAI JP 1985-240532		19851029		

AB Tide heat-resistant, nondripping compns. having good extrudability comprise polymer mixts. of 5-95% polyolefins and 5-95% silane-grafted polyolefins 100, titanate or silane coupling agent-treated metal hydroxides 50-200, mixts. of red P and phosphines 2-50, and inorg. filler 1-20 parts. Thus, Sumikathene L FA201-0 (I) 80, vinyltrimethoxysilane-grafted Sumikathene C-209 (II) 20, Plenact [titanate-treated Higilite H-30 (Al(OH)₃] 150, Novared #120 (red P) 3, and Carplex 67 (silica) 3 parts were mixed, and extruded to form a product showing tensile strength 1.36 kg/mm², UL-94 fire resistance rating V-0, and heat deformation (JIS K6723) 12; vs. 0.87, dripping and 36, resp., using LDPE instead of the I and II.

L16 ANSWER 22 OF 39 CA COPYRIGHT 2003 ACS

Full Text

AN 106:120853 CA

TI Moldable polyolefin blends containing fiber-reinforced unsaturated alkoxysilane-grafted polyolefins

IN Spielau, Paul; Klaar, Karlo; Kuehnelt, Werner; Leng, Robert; Sautner, Anton

PA Dynamit Nobel A.-G., Fed. Rep. Ger.

SO Ger., 11 pp.

CODEN: GWXXAW

DT Patent

LA German

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI DE 3530364	C1	19870102	DE 1985-3530364	19850824
PRAI DE 1985-3530364		19850824		

AB The bending strength and heat resistance of moldable blends of partially cryst. ethylene-propylene (ter)copolymers, propylene (co)polymers, and polyethylene (I) are improved by addn. of partially crosslinked, fiber-reinforced products prep'd. by grafting polyolefins with CH₂:CR₁(CO₂)mR₂nSiR₃ (II, R₁ = H or C1-4 alkyl, R₂ = C1-10 alkylene, R₃ C1-5 alkoxy or alkoxyalkoxy, m, n = 0 or 1). A mixt. contg. 92:8 ethylene-propylene copolymer (MFI 1.3 g/10 min) 100, vinyl trimethoxysilane 2, dicumyl peroxide 0.4, Bu₂Sn dilaurate 0.05, antioxidant 0.5, and TiO₂ 1 part was extruded onto a glass-fiber mat, and the plate (glass-fiber content ~30%, crosslinking degree 52%) was ground to a fine powder. The powder was injection-molded (15 parts) with 100 parts mixt. contg. 67:3:30 ethylene-ethylidenenorbornene-propylene copolymer (MFI 0.7 g/10 min, tensile strength 15 N/mm²) 34, propylene block copolymer (MFI 6 g/10 min) 56, I [MFI (190°/5 kg) 20 g/10 min] 10, UV absorber and antioxidant 0.6, and colored pigment 1.0 part at 220° to give a sample (glass-fiber content 3.9%) with bending modulus 580 N/mm² and heat-distortion temp. 95°, compared with 450 and 70, resp., for a similar sample (glass-fiber content 1.5%) not contg. the grafted ethylene-propylene copolymer powder compn.

L16 ANSWER 23 OF 39 CA COPYRIGHT 2003 ACS

Full Text

AN 103:196917 CA

TI Crosslinkable composition comprising a thermoplastic silyl-modified polymer and a supported silanol condensation catalyst

IN Umblepy, Jeffrey David

PA BP Chemicals Ltd., UK

SO Eur. Pat. Appl., 15 pp.

STN Columbus

CODEN: EPXXDW

DT Patent
LA English
FAN.CNT 1

PATENT NO. KIND DATE APPLICATION NO. DATE

PI EP 150595 A2 19850807 EP 1984-308673 19841213
EP 150595 A3 19850821

R: AT, BE, CH, DE, FR, GB, IT, LI, NL, SE

NO 8500021 A 19850708 NO 1985-21 19850103

JP 60170628 A2 19850904 JP 1985-88 19850104

PRAI GB 1984-150 19840105

AB Silane-modified thermoplastics contg. a silanol condensation catalyst supported on a finely divided solid material (diam. <20 m) have good resistance to premature crosslinking. Thus, 5 parts of a mixt. of low-d. polyethylene 92.00, a 1:1 Bu₂Sn dilaurate [77-58-7]-SiO₂ mixt. 2.00, slip agent 1.00, and antioxidant 5.00%, blended by extrusion, and 95 parts 98.2:1.8 ethylene-trimethoxyvinylsilane copolymer [35312-82-4] were mixed, extruded (1.5-mm thick), and cured in H₂O for 1 h at 80° to give a material which was relatively free of surface defects caused by premature crosslinking and had a higher crosslink d., compared with a compn. prep. similarly but without the silica.

L16 ANSWER 24 OF 39 CA COPYRIGHT 2003 ACS

[Full Text](#)

AN 103:23313 CA

TI Polyolefin resin compositions

PA Sekisui Chemical Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 4 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

PATENT NO. KIND DATE APPLICATION NO. DATE

PI JP 60008345 A2 19850117 JP 1983-116584 19830628

PRAI JP 1983-116584 19830628

AB The title compns. contain (a) mixts. obtained by mixing vinylalkoxysilane-grafted polyethylene or vinylalkoxysilane-ethylene copolymer, inorg. filler or reinforcement, and alkyltin oxide as silane crosslinking catalyst under heating and (b) polyolefin resin. The compns. are prep. by mixing under heating to avoid coupling of fillers using hot H₂O; they have good bonding between the polyolefins and fillers or reinforcements and afford moldings with improved impact resistance. Thus, 50 parts surface-untreated short glass fibers (I) and 0.1 part butyltin oxide laurate [80685-41-2] were added to 100 parts vinyltrimethoxysilane-grafted polyethylene [35312-82-4] [obtained from polyethylene (II) 100, vinyltrimethoxysilane 3, and dicumyl peroxide 0.05 part], roll-kneaded at 140-150°, and cut to prep. pellets, and 100 parts of which was added to 100 parts polypropylene (III) [9003-07-0] resin. The prep. compn. was injection molded to form a sheet having flexural strength 840 kg/cm² and Izod impact strength 25 ± 0.7 kg/cm², compared with 700 and 6 ± 0.3, resp., for a sheet prep. from I 33, II 67, and III 100 parts.

L16 ANSWER 25 OF 39 CA COPYRIGHT 2003 ACS

[Full Text](#)

AN 102:205532 CA

TI Curable coatings for thick films

PA Nippon Kokan K. K., Japan

SO Jpn. Kokai Tokkyo Koho, 7 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

PATENT NO. KIND DATE APPLICATION NO. DATE

PI JP 60013854 A2 19850124 JP 1983-121286 19830704

JP 01019701 B4 19890412

PRAI JP 1983-121286 19830704

AB Title coatings with excellent corrosion resistance, flexibility, and impact strength at low temp. contain epoxy resins, nonaq. diluents, hardeners, and pigments including 15-30% (based on total solids) water-crosslinkable polyolefin powder beads. Thus, GY252 [39403-99-1] (bisphenol epoxy resin 40, talc 15, glass flakes 20, Siogratene [71892-63-2] (water-crosslinkable polyethylene powder, particle size £50 mesh) 20, TiO₂ 5, Sintaron N-1 (non-reactive diluent) 10, and Aerosil 2 parts were mixed to prep. a coating base (with high viscosity), which was mixed with a hardener comprising HY 830 7 equiv. DSX-NS170 3

equiv. water 2%, and A 187 1% (based on the coating base) and applied to a vertical surface to form a film >10 mm thick without sagging or tearing. The film showed excellent corrosion resistance and impact strength >5 kg-m at 20° and 4 kg-m at -30°, vs. 3 kg-m and 0.5 kg-m, resp., for a com. resin mortar coating.

L16 ANSWER 26 OF 39 CA COPYRIGHT 2003 ACS

[Full Text](#)

AN 102:205137 CA

TI Laminated sheets for printed circuit boards

PA Sumitomo Bakelite Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 7 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

PATENT NO. KIND DATE APPLICATION NO. DATE

PI JP 60011354 A2 19850121 JP 1983-118245 19830701

PRAI JP 1983-118245 19830701

AB Moisture-resistant printed circuit boards with improved dielec. properties at high frequency are prep. by laminating a silane-modified polyethylene with a prepreg contg. <35% epoxy resin to give a laminate having ratio(r) of thickness of the first layer to thickness of the second layer >0.6. Thus, 70 parts polyethylene was grafted with 1.5 parts triethoxyvinylsilane to give a graft copolymer (I) [29503-87-5]. Cu foil, 1 sheet, a stack of 3 glass fiber prepregs contg. 25% Epikote 1046 [82446-34-2] (epoxy resin), 1 sheet, and Cu foil were pressed together 120 min at 160° to give a laminate (r 4.4) with dielec. const. at 1 MHz 2.8.

L16 ANSWER 27 OF 39 CA COPYRIGHT 2003 ACS

[Full Text](#)

AN 102:168420 CA

TI Steel pipes with heat-resistant polyethylene coating

PA Sekisui Chemical Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 2 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

PATENT NO. KIND DATE APPLICATION NO. DATE

PI JP 60002356 A2 19850108 JP 1983-111157 19830620

PRAI JP 1983-111157 19830620

AB Active C, silica, alumina, and/or metal oxide (or complex salt) contg. SiO₂ is mixed with powd. vinylsilane-grafted polyethylene and/or polyethylene-vinylsilane copolymer; the mixt. is melt-applied on a heated steel pipe to obtain a heat-resistant crosslinked coating. Thus, a powd. mixt. of vinyltrimethoxysilane-grafted polyethylene, mica, and Bu₂SnO was sprayed on the inner surface of a 200° steel pipe. KMnO₄ consumption of water (filled in the pipe), as detd. by the ISO method, was 18 ppm, compared with 77 ppm for uncoated pipe.

L16 ANSWER 28 OF 39 CA COPYRIGHT 2003 ACS

[Full Text](#)

AN 102:150633 CA

TI Composite resin laminates

PA Sumitomo Bakelite Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 6 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

PATENT NO. KIND DATE APPLICATION NO. DATE

PI JP 59222341 A2 19841214 JP 1983-95688 19830601

JP 04066694 B4 19921026

PRAI JP 1983-95688 19830601

AB Laminates having good dielec. properties at high frequency comprise an outer layer of silane-modified polyethylene, an inner layer of an epoxy resin contg. paper or fabrics, and optionally metal foils on 1 or 2 sides of the outer layer, with the resin layers having total thickness ratios >1.8. Thus, an electrolyzed Cu foil (NSGA-35), a sheet contg. ethylene-triethoxyvinylsilane copolymer (I) [29503-87-5], an epoxy prepreg contg. Epikote 1046 [82446-34-2] (a bisphenol A brominated epoxy resin), EPC-N-673 [88813-74-5] (a cresol novolak epoxy resin), and glass fabrics, a 1 sheet, and an NSGA-35 foil were pressed 120 min at

STN Columbus

160° (60 kg/cm²) to prep. a laminate (I layer-epoxy resin layer thickness ratio 5.0) having dielec. const. 2.8 MHz, dielec. loss tangent 15 × 104 MHz, and electrostatic capacity drift 0.8%, compared with 3.5, 35 × 104, and 5.0, resp., for a polysulfone sheet.

L16 ANSWER 29 OF 39 CA COPYRIGHT 2003 ACS

[Full Text](#)

AN 102:150610 CA

TI Composite laminated sheets

PA Sumitomo Bakelite Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 6 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 59221324	A2	19841212	JP 1983-95687	19830601
JP 03041068	B4	19910620		
PRAI JP 1983-95687		19830601		

AB The sheets, with excellent high-frequency dielec. characteristics, interlayer adhesion, and resistance to degradn. by moisture, are prep'd by laminating crosslinkable silane-modified polyethylene sheets or films, epoxy resin prepregs contg. silanol condensation catalysts, and optionally metal foil sheets. The catalysts are monobutyltin chloride [1118-46-3], dibutyltin chloride [683-18-1], monobutyltin oxide [51590-67-1], dioctyltin maleate (I) [16091-18-2], and/or dibutyltin dimethoxide [1067-55-6]. Thus, Sholex (HDPE) 100, vinyltrimethoxysilane 2, and dicumyl peroxide 0.2 part were mixed with com. antioxidants and metal deactivators, pelletized, extruded through an annular die, and inflated to form a 200-m silane-modified polyethylene (II) [35312-82-4] film. Sep., Epikote 1046 [82446-34-2] 85, EPC-N 673 [88813-74-5] 15, dicyandiamide 4, benzyldimethylamine 0.5, and I 3.5 parts were dissolved in MEK, applied to 0.18-mm glass fiber cloth sheets, and dried to obtain catalyst-contg. 25%-resin prepregs. Sheets of Cu foil, II, the prepreg, II, and Cu foil were assembled in that order, and pressed at 60 kg/cm² and 160° for 120 min to form a metal-clad laminate which showed dielec. const. 2.9 and tan δ 20 × 10⁻⁴ at 1 MHz, and interlayer adhesion 100 g/cm at 150°, vs. 60 g/cm using dibutyltin dilaurate instead of I.

L16 ANSWER 30 OF 39 CA COPYRIGHT 2003 ACS

[Full Text](#)

AN 102:96698 CA

TI Composite laminates for printed circuit boards

PA Sumitomo Bakelite Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 3 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 59209859	A2	19841128	JP 1983-84235	19830516
JP 03041067	B4	19910620		
PRAI JP 1983-84235		19830516		

AB A composite laminate of a silane-grafted crosslinkable ethylene polymer film or sheet and a silanol condensation catalyst-contg. prepreg with 5-35% epoxy resin gives a product with uniform thickness and useful in manuf. of a printed circuit board. Thus, 2 crosslinkable sheets (thickness 200 m), prep'd by extruding a mixt. of Sumikathene 70, vinyltriethoxysilane 1.5, dicumyl peroxide 0.1, a halogen-contg. fire retardant 20, and Sb2O3 10 phr, with other additives, was sandwiched between glass cloths impregnated with 22% EP 1045 (epoxy resin) contg. dicyandiamide 4, benzyldimethylamine 0.5, and dibutyltin dilaurate [77-58-7] 3.5 phr. After covered on both sides with a pair of the polyethylene sheet and a Cu foil (thickness 35 m), the stack was pressed at 160° and 40 kg/cm² for 150 min to give a laminate exhibiting dielec. const. 2.9 (at 1 MHz), soldering temp. resistance >20 s at 260°, and 90° peel strength 2.1 kg/cm between Cu foil and polyethylene and 0.10 kg/cm between polyethylene and glass cloth, with uniform thickness, compared with 3.0, >20 s, 2.1 kg/cm, and 0.06 kg/cm, resp., with uneven thickness, when a prepreg contained 45% epoxy resin.

L16 ANSWER 31 OF 39 CA COPYRIGHT 2003 ACS

[Full Text](#)

AN 100:86898 CA

TI Metal-covered laminate

IN Yanagida, Tomomi; Ajiki, Mitunori; Suzuki, Shigeru

PA Sumitomo Bakelite Co., Ltd., Japan

SO Ger. Offen., 42 pp.

CODEN: GWXXBX

DT Patent

LA German

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI DE 3313579	A1	19831020	DE 1983-3313579	19830414
DE 3313579	C2	19910214		
JP 58181636	A2	19831024	JP 1982-64050	19820419
JP 61029868	B4	19860709		
JP 58181637	A2	19831024	JP 1982-64051	19820419
JP 61022625	B4	19860602		
JP 58181638	A2	19831024	JP 1982-64052	19820419
JP 61022628	B4	19860602		
JP 58181639	A2	19831024	JP 1982-64053	19820419
JP 61029869	B4	19860709		
JP 58181640	A2	19831024	JP 1982-64054	19820419
JP 61029870	B4	19860709		
JP 58181641	A2	19831024	JP 1982-64055	19820419
JP 61022629	B4	19860602		
US 4499145	A	19850212	US 1983-480034	19830329
GB 2120600	A1	19831207	GB 1983-10331	19830415
GB 2120600	B2	19860108		
SU 1584762	A3	19900807	SU 1983-3583670	19830418
PRAI JP 1982-64050		19820419		
JP 1982-64051		19820419		
JP 1982-64052		19820419		
JP 1982-64053		19820419		
JP 1982-64054		19820419		
JP 1982-64055		19820419		

AB A metal-covered laminate having a low E-value, a low tan δ value, and outstanding moisture-insensitive insulating properties comprises a core consisting of a no. of elec. insulator layers and outer layers on 1 or both sides of metal foil. Thus, a laminate was prep'd by pressing layers of Cu foil, ethylene-vinyltrimethoxysilane graft copolymer (I) [35312-82-4], an epoxy resin prepreg. contg. Epikote 1046 [82446-34-2] 85, EPC-N-673 [88813-74-5] 15, dicyandiamide 4, benzyldimethylamine 0.5, and dioctylzinc maleate 3.5 parts with 78% glass fibers, I, the epoxy prepreg, I, and Cu foil 120 min at 160° and 60 kg/cm². The laminate had dielec. const. (1MHz) 3.0, dielec. loss (1MHz) 25, drift of electrostatic capacity 1.0%, H₂O absorption 0.02%, peel strength 2.0 kg/cm, heat-resistance to soldering 20 s/260°, stampability good, adhesion between layers (in air at 150°) 0.08 kg/cm, heat resistance to soldering after absorption in boiling H₂O no change, and laminability 1 cm, as compared to 2.8, 15, 0.8, 0.02, 1.8, 20, poor, 0.03, no change, and 1, resp., for a similar laminate contg. no epoxy resin.

L16 ANSWER 32 OF 39 CA COPYRIGHT 2003 ACS

[Full Text](#)

AN 96:144104 CA

TI Molding of crosslinked polyolefins

PA Fujikura Cable Works, Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 3 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 56167731	A2	19811223	JP 1980-71882	19800529
PRAI JP 1980-71882		19800529		

AB Blends of polyethylene (I) grafted with a silane deriv. and a compn. contg. I, silica, and a silanol condensation catalyst have improved ease of moldability. Thus, 100 parts low-d. I was grafted with 5 parts trimethoxyvinylsilane to give a graft copolymer (II) [35312-82-4]. A blend of II and a compn. contg. I 100, dibutyltin laurate 2.0, bis(3,5-di-tert-butyl-4-hydroxybenzyl) phosphate 2.0, and silica 3.0 parts at 19:1 wt. ratio was melt extruded to give a product with low die wastes, whereas die wastes were high on molding a similar compn. without silica.

L16 ANSWER 33 OF 39 CA COPYRIGHT 2003 ACS

[Full Text](#)

AN 96:86680 CA

STN Columbus

TI Moisture-curable, stampable sheets
 PA Dainippon Ink and Chemicals, Inc., Japan
 SO Jpn. Kokai Tokkyo Koho, 4 pp.

CODEN: JKXXAF

DT Patent
 LA Japanese
 FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 56149439	A2	19811119	JP 1980-52319	19800422
PRAI JP 1980-52319		19800422		

AB The title sheets were prep. by impregnating glass fibers with a melt-blended mixt. of a thermoplastic resin, CH₂:CHSi(OR)₃ (R = alkyl, Ph), and a radical initiator. For example, powd. polyethylene 100, vinyltrimethoxysilane 2, and tert-Bu perbenzoate 0.2 part were mixed at 80° and extruded at 200° to give a 3 mm graft polymer [35312-82-4] sheet. A 2-ply overlay of chopped strand mats was sandwiched between 2 graft polymer sheets and pressed at 200° to give a 6.5 mm stampable sheet with glass content 20%. The stampable sheet was sprayed with a 20% soln. of Bu₂Sn dilaurate in xylene and crosslinked in 80° water for 20 h to give bending strength 13.7 kg/mm², bending modulus 510 kg/mm², tensile strength 10.5 kg/mm², tensile modulus 570 kg/mm², Izod impact strength 143 kg-cm/cm, heat-distortion temp. 157°, and gel content (120° xylene, 20 h) 73%, compared with 7.2, 410, 5.7, 490, 98.2, 120, and 0, resp., for a control prep. with polyethylene without grafting.

L16 ANSWER 34 OF 39 CA COPYRIGHT 2003 ACS

[Full Text](#)

AN 94:66857 CA
 TI Copper foil laminates with electric insulators
 PA Sumitomo Bakelite Co., Ltd., Japan
 SO Jpn. Kokai Tokkyo Koho, 4 pp.

CODEN: JKXXAF

DT Patent
 LA Japanese
 FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 55127438	A2	19801002	JP 1979-33256	19790323
JP 60049422	B4	19851101		
PRAI JP 1979-33256		19790323		

AB A laminate of Cu foil, silane-grafted polyethylene (I) films, and organotin compd.-coated glass fabrics or organotin compd.-contg. epoxy resin prepregs is pressed to give a Cu-elec. insulator laminate having good interlaminar adhesion. Thus, a compn. of I 100, trimethoxyvinylsilane 2, and dicumyl peroxide 0.2 part was extruded at 250°, pelletized, extruded into a tubular film, and blown to give a 200-m film of graft copolymer (II) [35312-82-4]. A pile of 35-m Cu foil, II film, dibutyltin dilaurate [77-58-7]-coated 0.21-mm glass fabric, II film, similar glass fabric, and II film in that order was pressed at 170° and 80 kg/cm² to give a laminate having H₂O absorption 0.02%, dielec. const. (1 MHz) 2.8 and 2.8 before and after 48 h in H₂O at 50°, resp., dielec. loss 0.0005 and 0.001, resp., resistivity 6 × 10¹³ and 10¹³ W before and after 2 h of boiling in H₂O, resp., peel strength of Cu 1.9 kg/cm, and soldering resistance (260°)³ 10 s, compared with 0.11, 4.4, 4.5, 0.022, 0.025, 5 × 10¹³, 5 × 10¹², 2.0, and ³ 10, resp., for a conventional Cu foil-epoxy resin prepreg laminate.

L16 ANSWER 35 OF 39 CA COPYRIGHT 2003 ACS

[Full Text](#)

AN 88:171882 CA
 TI Methods and results of studies of the suitability of powder epoxy resins for coating electronic and electrical subcomponents
 AU Drzewiecka, Sylwia; Kopczynska, Maria
 CS Pol.
 SO Prace Przemyslowego Instytutu Elektroniki (Warsaw) (1975), 16(3), 27-36
 CODEN: PPIEAI; ISSN: 0509-7053

DT Journal
 LA Polish

AB The particle size distributions, covering power on angular surfaces, heat and thermal shock resistance, water absorption, elasticity, adhesion to metals, glass, and ceramics, and dielec. properties of imported X 183/2593 (I) [66257-43-0] powd. epoxy resin were satisfactory for coating elec. components (e.g. condensers, microcircuits, thyristors) by dipping in fluidized beds of the resin. Polish Epifluid 2 [66269-51-0] resin had unsatisfactory edge covering ability, but its other properties

were similar to I. Other resins tested (Telcoset 401 B [66257-44-1] and XDKF W-771 [66257-45-2]) were inferior to I in this application.

L16 ANSWER 36 OF 39 CA COPYRIGHT 2003 ACS

[Full Text](#)

AN 87:136847 CA
 TI Moisture-crosslinkable copolymer
 IN Schmidtchen, Hans M.
 PA Kabel- und Metallwerke Gutehoffnungshuette A.-G., Fed. Rep. Ger.
 SO Ger. Offen., 7 pp.

CODEN: GWXXBX

DT Patent
 LA German
 FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI DE 2528691	A1	19770113	DE 1975-2528691	19750627
PRAI DE 1975-2528691		19750627		

AB In the grafting of polyethylene (I) with (MeO)₃SiCH₂:CH₂ (II) in the presence of peroxides, solids such as silica and CaO₃ are added to improve the diffusion of II in I and give homogeneous, moisture-crosslinkable copolymer. Thus, a copolymer. mixt. contained I 100, antioxidant 0.5, tert-Bu peroxyisooctanoate 0.2, 1,3-bis(tert-butylperoxyisopropyl)benzene 0.02, II 2.6, triallyl cyanurate 0.1, highly disperse silica 0.4, and CaCO₃ 1.5 parts.

L16 ANSWER 37 OF 39 CA COPYRIGHT 2003 ACS

[Full Text](#)

AN 84:136989 CA
 TI Curable compositions
 IN Nishizawa, Hitoshi; Morita, Minoru; Nishikawa, Ichiro
 PA Showa Electric Wire and Cable Co., Ltd., Japan
 SO Jpn. Kokai Tokkyo Koho, 3 pp.

CODEN: JKXXAF

DT Patent
 LA Japanese
 FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 51008355	A2	19760123	JP 1974-79400	19740711
PRAI JP 1974-79400		19740711		

AB The compns. comprised 100 parts ethylene-trimethoxyvinylsilane graft copolymer (I) [35312-82-4], 20-100 parts elastomers compatible with polyethylene (II) [9002-88-4], and assistants. Thus, low-d. II was mixed with trimethoxyvinylsilane 2, dicumyl peroxide 0.25, and tri-Me dihydroquinoline polymer (III) 0.5%, heated at 200-35° for 5 min to give I, mixed (95 parts) with 5 parts low-d. II contg. 0.25% dibutyltin dilaurate and 0.5% III, blended with chlorosulfonated II 50, Al silicate 30, and a process oil 5 part, and cured in water.

L16 ANSWER 38 OF 39 CA COPYRIGHT 2003 ACS

[Full Text](#)

AN 70:97553 CA
 TI Castable resins for airplane construction
 AU Heissler, Herbert; Niederstadt, Guenter
 CS Boelkow G.m.b.H., Muenchen, Munich, Fed. Rep. Ger.
 SO Gummi, Asbest, Kunststoffe (1968), 21(11), 1218-19, 1222-4, 1226
 CODEN: GAKSA2; ISSN: 0017-5595

DT Journal
 LA German

AB The classification of resins for airplane construction was discussed, and several resins and hardeners for glass-fiber-reinforced plastics were tested. Resins were classified as unmodified (e.g. Araldite CY 205 (I), Beckopox 37-139, 37-140 (II), 37-141, and Rutapox 0164) or modified to improve elasticity, plasticity, or processing (e.g. Araldite CY 209, Rutapox 0502 or 0503, Beckopox 37-123, or Lekutherm K 27 (III) and K 57). The change of shear rigidity of laminates with increasing temp. was measured and used as a criterion for thermal stability. The most stable glass-fiber-reinforced resins (stable at 70-80°), which are useful in the construction of airplanes, were Lekutherm E 571 with 40% Laromin C 260 (IV), III with 44% IV, Araldite X 1183/224 with 35% IV, 70:30 I-CY 207 with 34% IV, and II with 32% IV. Epoxin 162 with 38% IV contg. 42.5% glass fibers showed a decrease in shear stability starting at room temp. while GfT 0502 with 44% IV was slightly more stable. Increasing the heating time after hardening from 6 hrs. at 80° to 12 hrs. at 100° shifted the congealing temp. 20° higher. The thermal stability was also increased by using dicarboxylic acid anhydrides as hardeners, e.g. Hardener X 157/2378 (V), M, and HT. The

cohesion of glass-fiber-reinforced resins was greatly decreased by increasing the glass fiber content, or by boiling the sample in water for 48 or 216 hrs. Resins hardened with V decreased much less in cohesion after boiling 216 hrs. than resins hardened with hardener H. Addn. of a thixotropic substance or a flexibility improver (tricresyl phosphate) caused a great decrease in cohesion after boiling only 48 hrs. The adhesiveness of various laminates of glass fiber reinforced with 5 adhesives was tested at room temp., 54°, and 72°. Adhesives which changed little with temp. were 100:50 AW 106-HV 953U, 100:40 Araldite X 183/2345-Araldite X 157/2346, 100:40 LBB 299-Araldite X 157/2346, and Araldite AV 138-HV 998. The variation of shear modulus with temp. was also studied.

L16 ANSWER 39 OF 39 CA COPYRIGHT 2003 ACS

Full Text

AN 45:6097 CA

OREF 45:1064c-h

TI Amines related to 2,5-dimethoxyphenethylamine. V. 2,5-Dihydroxy and 2-methoxy-5-hydroxy derivatives

AU Baltzy, Richard; Buck, Johannes S.; Ide, Walter S.

CS Wellcome Research Labs., Tuckahoe, NY

SO J. Am. Chem. Soc. (1950), 72, 382-4

CODEN: JACSAT; ISSN: 0002-7863

DT Journal

LA Unavailable

AB cf. C.A. 42, 7725g.-2,5-(MeO)2C6H3CH2CH2NH2 in 35 cc. concd. HCl heated

2

hrs. in a glass bomb at 170° yielded 2,5-dihydroxyphenethylamine-HCl (I). Demethylation of 2,5-(MeO)2C6H3CH2CH2NH2 yielded an uncrystallizable compd. Quinacetophenone (0.2 mole) [prepd. by the method of Nencki and Schmid, J. prakt. Chem. [2] 23, 546(1881), in improved yield by refluxing vigorously 1.5 hrs.], 0.35 mole PhCH2Cl, and 0.3 moles NaOH refluxed 2 hrs. and extd. with ether yielded 46% 2-hydroxy-5-benzyloxyacetophenone (II) and 25% 2,5-dibenzyloxyacetophenone (III). Methylation of II with Me2SO4 and alkali (100% excess of each) yielded 90% 2-methoxy-5-benzyloxyacetophenone (IV). Bromination of III and IV in MeOH (C.A. 40, 3419.3) yielded 88% 2,5-dibenzyloxy-a-bromoacetophenone (V), and 54% 2-methoxy-5-benzyloxy-a-bromoacetophenone (VI), resp. V and (CH2)6N4 yielded 2,5-dibenzyloxy-a-aminoacetophenone-HCl (cryst. but impure) which with Pd-on-C gave 2,5-dihydroxyphenyl-a-aminoacetophenone-HCl (VII). VI and V with PhCH2NHMe in ether, followed by Pd-on-C, yielded 2-methoxy-5-hydroxyphenyl-a-methylaminoacetophenone-HCl (VIII) and 2,5-dihydroxyphenyl-a-methylaminoacetophenone-HCl (IX), resp. In both cases the intermediate benzyl-(methylamino)ketone could not be crystd. Reduction of VII and VIII with Adams catalyst in 90% EtOH yielded b,2,5-trihydroxyphenethylamine-HCl (X) and b,5-dihydroxy-2-methoxy-N-methylphenethylamine-HCl (XI). IX yielded an intractable tar. As pressors X and XI are inferior to the corresponding 2,5-di-MeO compds. The compds., their m. ps. (cor.), appearance, and crystn. solvent are: I, 173°, tan micro plates, EtOH-ether; X, 176°, lavender powder, EtOH; VII, 230° (decompn.), fine yellow needles, EtOH; V, 100°, silky needles, heptane; III, 81°, plates, hexane; XI, 199°, prisms, EtOH-ether; VIII, 224° (decompn.), fine yellow needles; VI, 80°, rhombs, heptane; IV, 54°, prisms, hexane; II, 69.5-70°, yellow needles, MeOH; IX, 225° (decompn.), yellow crusts, EtOH.

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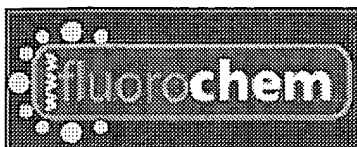
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SILANE-MODIFIED POLYMERS

Polymeric Coupling Agents

Polymeric silanes are preferred in film-forming and primer applications. Multiple bonding opportunities with both inorganic substrates and polymer matrices make these materials desirable in many adhesive bonding formulations. Polymeric coupling agents introduce new considerations when used as additives in composite systems. In general, hydrophilic polymeric silanes are more effective on hydrated substrates such as aluminum trihydrate, a wetting phenomenon, but care must be taken to maintain reactivity with the organic substrate. It has been demonstrated that when polymeric silanes are used in composites, dialkoxy versions generally give higher mechanical properties than trialkoxy-silanes. Vinyl and other unsaturated polymeric silanes can be grafted to polyolefins with peroxides. Those with alkoxy groups can be subsequently crosslinked with moisture. The technology is important in enhancing wet electricals and use temperature ranges for the wire and cable industry. Alkoxy-silane modified polymers are used to transfer the properties of a polymer to inorganic material by displacing alkoxy groups on the silicon. The materials have uses as permanently bonded stationary phases for chromatography and exchange columns. Other polymers with non-reactive silane pendant groups have been used for permeable membranes and as barriers.

Product [Cas#]	Structure	Solvent/Nominal % Solids	Specific Gravity	Visc. (centistokes)	100g	1 kg
PS076 [75132-84-2]	Trimethoxy silyl modified polyethyleneimine(50% solids)	Isopropanol/50	0.91	125-175	X	X
PS076.5 [1255441-88-5]	Methyldimethoxy silyl modified polyethyleneimine(50% solids)	Isopropanol/50	0.92	125-175	X	X
PS077	(N- Triethoxysilylpropyl) O-Polyethylene- Oxide Urethane	None/100	0.93	25-60	X	X
PS078.5 [72905-90-9]	Triethoxysilyl modified 1,2-polybutadiene(50% solids)	Toluene/50	0.90	25-50	X	X
PS078.8	Methyldiethoxysilyl modified 1,2- polybutadiene(50% solids)	Toluene/50	0.90	35-60	X	X
PS078.9 [131298-48-1]	Poly(vinyl methoxy) siloxane	None/100	1.10	8-11	X	X
PS079.5						

[87842-32-8]	Poly(Trimethylsilyl) Propyne	Toluene/5	0.80	2-8	X	X
PS081	Poly(Dimethylsiloxane)	None/100	1.18		X	X
[99904-16-2]	etherimide					
POLYSILAZANES						
Prod. #	Description	d₄ 25°	Visc. centistokes	Char % 700°	SG	10g 100g
PS112	Poly(1,1-dimethylsilazane) Crosslinked		> 1000	10-15		X X
PS112.1	Poly-(1,1-dimethyl-silazane) Telomer	1.042	6000-8000	5-10		X X
[89535-60-4]						
PS114	Poly- (1,2-dimethylsilazane)	0.99	600-800	15-20		X X
PS116	(1,2-dimethylsilazane) (1-methylsilazane) Copolymer	1.04	70.2	50-55	1.024	X X
PS117	N-Methylsilazane Resin in Toluene, 25% Solids RI 1.494 (25°C)			50-55 (800°)		X X

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SILANE-MODIFIED POLYMERS

Polymeric Coupling Agents

Polymeric silanes are preferred in film-forming and primer applications. Multiple bonding opportunities with both inorganic substrates and polymer matrices make these materials desirable in many adhesive bonding formulations. Polymeric coupling agents introduce new considerations when used as additives in composite systems. In general, hydrophilic polymeric silanes are more effective on hydrated substrates such as aluminum trihydrate, a wetting phenomenon, but care must be taken to maintain reactivity with the organic substrate. It has been demonstrated that when polymeric silanes are used in composites, dialkoxy versions generally give higher mechanical properties than trialkoxy-silanes. Vinyl and other unsaturated polymeric silanes can be grafted to polyolefins with peroxides. Those with alkoxy groups can be subsequently crosslinked with moisture. The technology is important in enhancing wet electricals and use-temperature ranges for the wire and cable industry. Alkoxy-silane modified polymers are used to transfer the properties of a polymer to inorganic material by displacing alkoxy groups on the silicon. The materials have uses as permanently bonded stationary phases for chromatography and exchange columns. Other polymers with non-reactive silane pendant groups have been used for permeable membranes and as barriers.

Prod. #	Structure	Solvent/Nominal % Solids	Specific Gravity	Visc.
PS076		Isopropanol/50 CAS# [75132-84-2]	0.91	125-175
PS076.5		Isopropanol/50 CAS# [125544-88-5]	0.92	125-175
PS077	(N-Triethoxysilylpropyl)O-Polyethylene Oxide Urethane		0.93	25-60
PS078.5		Toluene/50 CAS# [72905-90-9]	0.90	25-50
PS078.8		Toluene/50	0.90	35-60
PS078.9		None/100 CAS# [131298-48-1]	1.10	8-11
PS079.5	Poly(Trimethylsilyl) Propyne	CAS# [87842-32-8]	0.80	2-8

POLYSILANES AND SILAZANES

Polysilanes have a continuous backbone of silicon atoms. Characteristics include lower solubility, higher glass transition temperatures and perhaps most importantly, unique optical properties including long wavelength UV absorption which intensifies as the degree of polymerization increases. These perturbations are associated with delocalization of silicon-silicon sigma bonding and other orbitals. The polymers also undergo reduction in molecular weight when exposed to ultraviolet radiation.

A rash of applications for polysilanes, many of them patented, have been developed.

Polydimethylsilanes have been converted to silicon carbide fibers in a two-stage pyrolysis. Some soluble polysilanes have demonstrated utility as photoresists and as initiators for photopolymerization.

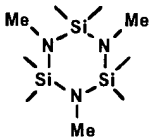
Like the polysilanes, polysilazanes were synthesized many years ago, but detailed studies and applications are more recent. The most conspicuous uses are the production of silicon nitride for high performance refractory materials and as dielectric coatings for microelectronics.

UCT offers traditional 1,1-dimethylsilazanes which decompose to silicon nitride at 500° C and hydrosilazanes that decompose at 400-450° C with less silicon carbide contamination. Complete conversion to ceramics occurs at temperatures exceeding 400° C.

POLYSILANES

Prod. #	Description [CAS #]	Form	Solvent	λ_{max}	Other	Thermal	Char % at 800° by TGA
PS101	Poly(cyclohexylmethyl) silane	solid	Toluene THF	320		Tg: 93°	5-10% N ₂ 30-35% air
PS101.5	Polydihexylsilane	solid					
PS106	Poly(phenylmethylsilane)	solid	Toluene	337		Tg: 112-122°	
PS108	(90%) Dimethylsilane-10% Dimethylsiloxane Copolymer	liquid	THF, Toluene	258	S.G. 0.94		
PS109	(50%) Cyclohexylmethyl- silane (50%) Dimethyl- silane Copolymer	solid	Toluene	304		Tg: 100°	10-15% N ₂ 30-35% air

POLYSILAZANES

Prod. #	Description	Structure	d ₄ 25	Visc.	Char % 700°	SG
PS112	Poly (1,1-dimethyl-silazane) Crosslinked	$\left[\begin{array}{c} \text{Me} \\ \\ \text{Si}-\text{NH} \\ \\ \text{Me} \end{array} \right]_n$		>1000	10-15	
PS112.1	Poly (1,1-dimethyl-silazane) Telomer [89535-60-4]	$\left[\begin{array}{c} \text{Me} \\ \\ \text{Si}-\text{NH} \\ \\ \text{Me} \end{array} \right]_n$	1.042	6000-8000	5-10	
PS114	Poly (1,2-dimethyl-silazane)	$\left[\begin{array}{cc} \text{Me} & \text{Me} \\ & \\ \text{Si}-\text{N} \\ & \\ \text{H} & \end{array} \right]_n$	0.99	600-800	15-20	
PS116	(1,2-dimethylsilazane) (1-methylsilazane) Copolymer	$\left[\begin{array}{c} \text{Me} \\ \\ \text{Si}-\text{NH} \\ \\ \text{H} \end{array} \right]_m \left[\begin{array}{cc} \text{Me} & \text{Me} \\ & \\ \text{Si}-\text{N} \\ & \\ \text{H} & \end{array} \right]_n$	1.04	70.2	50-55	1.024
PS117	N-Methylsilazane Resin in Toluene, 25% Solids RI 1.494 (25)				50-55 (800°)	

T-RESINS AND LADDER POLYMERS

T-resins are highly cross-linked materials with the empirical formula $\text{RSiO}_{1.5}$. They are named from the organic group and the one and a half (sesqui) stoichiometry of oxygen. Thus $\text{C}_6\text{H}_5\text{SiO}_{1.5}$ is called polyphenylsilsequioxane. In general the resins have an unordered structure. Lower molecular weight, soluble resins (particularly phenyl) are believed to contain substantial ladder structure.

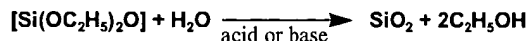
T-resins form the basis of a wide range of coating materials that can be used directly or in combination with other materials. They have been used as planarization layers and reactive ion etch layers in microelectronics. They are employed as binders in high performance mineral filled molding compounds and refractories. Chloromethyl aromatic resins can be cross-linked by ultraviolet radiation. A recent new application is silicone carbide fibre production via carbothermal reduction to SiC and CO at 400-600°.

T-RESINS & LADDER POLYMERS

Product #	Description [CAS #]	SG
PR6155	Polymethylsilsesquioxane [68554-70-1]	1.08
PR6160	Polyphenyl-propylsilsesquioxane	
PR6163	Polyphenyl-propylsilsesquioxane 4 OH groups average 30% propyl [68037-90-1]	
PR6194	Polyphenylsilsesquioxane mp ca 450-456°C high ladder content [70131-69-0]	
PR6197	Polyphenyl-vinylsilsesquioxane 10% vinyl	

POLYALKOXYSILOXANES-POLYSILICATES

Polyalkoxysilanes are often operationally viewed as liquid sources of silicon dioxide. The hydrolysis reaction, which yields polymers of silicic acid which can be dehydrated to silicon dioxide, is of considerable importance. The stoichiometry of hydrolysis for simple linear polydiethoxysilane is



Silicon dioxide never forms directly during hydrolysis. Intermediate ethoxy derivatives of silicic acid and polysilicates form as hydrolysis progresses. The polysilicates grow in molecular weight and chain length until most or all of the ethoxy groups are removed and a nonlinear network of Si—O—Si remains. The polyalkoxysiloxanes themselves contain cyclic and linear structures containing 3-6 silicon atoms. The viscosity of solutions increases until gelation or precipitation. Partially hydrolyzed materials of this type often contain more than enough silanols (SiOH) to displace most of the remaining ethoxy groups in an acid- or base-catalyzed condensation.

The hydrolysis reaction is catalyzed by acid or base. For binder preparation, dilute hydrochloric, nitric or acetic acids are preferred, since these facilitate formation of stable silanol condensation products. When more complete condensation or gelation is preferred, a wider range of catalysts, including moderately basic ones, is employed. These materials, which are often called hardeners or accelerators, include aqueous or anhydrous ammonia, ammonium carbonate, triethanolamine, calcium hydroxide, magnesium oxide, dicyclohexylamine, alcoholic ammonium acetate and tributyltin oxide. For glass formation hard bases such as sodium methoxide, sodium hydroxide or lithium methoxide are added. The stoichiometry of hard base is calculated to give the desired glass composition, e.g. 20% Na₂O: 80% SiO₂.

Polydiethoxysiloxane with 40% SiO₂ content (ethylsilicate 40) is the most widely used of this class of compounds finding wide use as a binder in investment casting and in zinc rich paints. Polydiethoxysiloxanes with higher SiO₂ content are sometimes preferred in coating formulations since they give less alcohol byproducts and dry faster. Polydimethoxysiloxane is preferred in many sol-gel or low heat glass applications since it has a high SiO₂ content and the methanol byproduct contributes to reduced stress-cracking. Mixed titano-siloxanes are intermediates for thermal shock resistant glass compositions.

Product #	Description	Visc.	SG
PS9120	Polydiethoxysiloxane (40-42% SiO ₂ content)	4-5	1.05-1.06
PS9125	Polydiethoxysiloxane (45-47% SiO ₂ content)	14-16	1.08-1.10
PS9130	Polydimethoxysiloxane (55-60% SiO ₂ content)	6-9	1.10-1.12
PS9150	(91-93%) (Diethoxysiloxane) (7-9%) Diethoxytitanoxane copolymer ratio of SiO ₂ :TiO ₂ =12-13.1 (44-47% SiO ₂ /TiO ₂ content)	15-25	

GLASSCLAD® HYDROPHOBIC COATINGS

Glassclad® 18 (PS200)

PS200 Imparts the Following Properties to Treated Surfaces

- Non-adherent, non-oily surfaces
- Greater scratch resistance
- Easier cleaning, improved appearance
- Reduces the number of surface polar sites

Uses

Applications where **PS200** have been used successfully include:

laboratory glassware — improves drainage, reduces breakage.

porcelain ware — provides a glide surface and reduces adhesion to other porcelain ware.

optical fibers — provides lubricity and reduces breakage during fabrication and in operational flexing.

clinical analysis — treatment of analytical equipment extends clotting time of blood, reduces hemolysis, reduces protein adsorption. Glassclad® 18 is not for food or drug use.

fluorescent light bulbs — increases scratch resistance, reducing breakage;
increases surface resistivity.

Properties of Treated Surfaces

Values reported are for glass slides dipped in 1% solutions of **PS200** and cured at 100°C.

critical surface tension

Untreated γ_c = 78 dynes/cm

Treated (hydrophobic) γ_c = 31 dynes/cm

surface resistivity

Untreated 1×10^{12} ohms

Treated 1.2×10^{13} ohms

blood protein adsorption

(glass slide on glass slide)

coefficient of friction, static

Untreated 0.9-1.0

Treated 0.2-0.3

comparative 100 hour adsorption

values for whole human blood on

borosilicate glass surfaces

Untreated 0.13mg/mm²

Treated 0.01-0.02mg/mm²

These results are not meant to suggest "in vivo" application of PS200. PS200 should be used only in treatment of diagnostic apparatus for clinical analysis in outside the human body applications.

Description

PS200 is a monomeric octadecylsilane derivative in a solution of t-butanol and diacetone alcohol that reacts with water to form a silanol-rich prepolymer and an alcohol. The silanol-rich prepolymer is able to condense with available hydroxy groups of glass or other siliceous materials to form a chemically bound alkylsilicone.

Typical Properties of PS200

% active 20%

Color, Gardner scale 8°

Flashpoint 10°C

Specific gravity (25-) 0.88

Solidification point -30°C

Application Method

PS200 is most frequently used as a dilute aqueous solution containing 0.1%-1.0% of reactive silicone prepolymer. A 0.2% solution of active chemical can be easily prepared by adding one part by weight of the product as supplied to 99 parts of water while stirring. The following procedure is frequently employed.

1. Thoroughly clean objects with an alkaline detergent. Used-glass surfaces may require immersion in 2-3% sodium hydroxide. All detergent or alkali should be removed with a final rinse.
2. Prepare a 1% solution of PS200 in water. Ordinary tap water, but not "hard water," is acceptable.
3. Immerse the glass or vitreous surface in the solution for 5-10 seconds, ensuring that all surfaces are wetted by the solution. Agitation of the solution or the part generally results in more uniform deposition. After immersion remove the part and thoroughly rinse with water to remove excess PS200 from the surface.
4. Cure PS200 coatings by bringing surface temperature to 100°C for 3-5 minutes. Room temperature cure may be accomplished by air drying for 24 hours if relative humidity is 65% or less. Each liter of solution will coat approximately 80 one liter beakers or 600 15cm test tubes. It will coat approximately 250 m² of surface.

Stability of PS200 and Solutions

Aqueous solutions of PS200 are not stable indefinitely and may turn cloudy and precipitate after standing for several days. The solution stability can be optimized by adjusting the pH of the solution to 4.5-5.

Hydrophobic Coatings

Glassclad® 6C (PS216)

Uses

Applications where Glassclad® 6C has been used successfully include:

laboratory glassware	improves drainage, reduces breakage.
fiber optics	reduces moisture adsorption and surface fracture.
clinical analysis	reduces protein and lipid adsorption of diagnostic glassware: Glassclad® 6C is not for food or drug use.
electronic glassware	reduces surface tracking in mercury switches, and optical displays.

Properties of Treated Surfaces

Values reported are for glass slides dipped in 1% solutions of Glassclad® 6C and cured at 100°C.

critical surface tension

Untreated $\gamma_c=78$ dynes/cm

Treated (hydrophobic) $\gamma_c=25$ dynes/cm

Description

Glassclad® 6C is a chlorine terminated polydimethylsiloxane telomer. The chlorines react with hydroxy and silanol groups of glass or other siliceous surfaces to form a chemically bound polydimethylsiloxane "siliconized" surface.

Typical Properties of Glassclad® 6C

% active	100%
Flashpoint	5°C
Specific gravity	0.98-1.00

Application Methods

Glassclad® 6C is a chlorinated polysiloxane and is corrosive. Avoid skin and eye contact. Use in a well ventilated area.

1. Glassclad® 6C is most frequently applied as a 2-10% solution in "dry" solvents such as hexane, methylene chloride, or 1,1,1-trichloroethane. Articles are dipped or wiped. The articles can be cured by air drying for 24 hours at conditions of less than 75% relative humidity. Heat curing at 110°C for 15-20 minutes in an exhausted oven provides the most effective surface treatment.
2. A master batch of Glassclad® 6C in isopropanol or anhydrous ethanol is desirable when large surfaces are to be treated and the acidic byproducts are difficult to handle. A 0.5 to 2% solution of Glassclad® 6C in isopropanol is prepared in a well ventilated area. Hydrogen chloride fumes issue during this stage. Acidic character is reduced for subsequent surface treatment. Overtreatment results in a cloudy surface. The concentration of Glassclad® 6C should be reduced to eliminate this effect.

Glassclad® Pressure Sensitive Adhesive

PS221 Glassclad® PSA

PS221 is high purity silicone pressure sensitive adhesive which forms strong temporary bonds to glass, insulation components, metals and polymers. Its clarity, thermal stability and electrical properties allow reversible bonding in a wide range of applications. The consistency and characteristics are similar to rubber cement but a higher strength bond is formed. It is supplied with an applicator brush.

Description

PS221 is a toluene dispersion of a highly purified two phase polydimethylsiloxane with high tack.

Properties

Solids content	55%
Viscosity	1000-2500 ctsks
Specific gravity	1.0
Flash point	5° C
Solvent	toluene

Application

PS221 is easily applied by brushing. If desired it may be thinned with additional toluene. After application to surfaces to be bonded, the solvent should be allowed to evaporate by air drying or low temperature explosion proof oven drying (80-90°C). Bonding is complete within 5 minutes of bringing surfaces together.

To convert PS221 to a permanent adhesive, add 1-2 drops of PC 040 to 50 mls. of PS221.

PS221 Glassclad PSA

Glassclad® PROTECTIVE HARD COATINGS

PS220 Glassclad® HT

20% solids in xylene

PS220 is a high temperature modified phenylsiloxane resin which has a continuous use temperature exceeding 350°C. It is used both as a thin film coating and for the production of laminated structures. It has a tensile strength of 3,500 psi and a hardness of 120R (Rockwell). Parts are dipped or sprayed with undiluted resin and cured 20 to 30 minutes at 240°C.

PS225 Glassclad® EG

20% solids in xylene

PS225 is a thermally stable resin which forms a moderately flexible film with excellent adhesion and low chloride content. It provides an oxidation and mechanical barrier for resistors and circuit boards. Part application is by spraying or dipping. Cure is 20 minutes at 220°C.

PS233 Glassclad® RC

50% solution in isopropanol

PS233 is a methylsilicone resin which forms a coating with high temperature (250°C) serviceability. Its high dielectric strength, thermal resistance and mechanical strength make it ideal as an electrical component and circuit board coating. PS233 reacts covalently with glass and siliceous surfaces to form a permanent bond. It has excellent abrasion resistant properties and can be applied to materials as a protective coating. It is typically applied by dipping or brushing followed by air dry and final cure at 150°C for one hour.

Glassclad® Silicon Dioxide Sources

PS235 Glassclad® TF

PS235 is employed as a source of thick film (0.2-0.4 micron) coatings of silicon dioxide. PS235 TF is a polymeric precursor of silicon dioxide. Silica formation begins at 110-120°C and is complete by 220°. The polymer converts to approximately 36% SiO₂. Applications for PS235 include dielectric layers, abrasion resistant coatings, and translucent films.

PS235 can be applied without solvent or in chlorinated hydrocarbon and ester vehicles. Specific gravity is 1.13. It is 100% solids.

PS222 Glassclad® SO

PS222 is specifically formulated for the deposition of silicon dioxide films on silicon. Undoped films are useful as protective films and as getter layers; doped silicon oxide films as getter layers. Cure is accomplished in two steps:

1) 2-5 mins at 200°C 2) final cure at 500°C. S.G.=0.84

Glassclad® Hydrophobic Stone and Masonry Coating

PR6772 Glassclad® MS

PR6772 is an alkaline resinous silicone solution that reacts with siliceous substrates including stone and masonry.

Uses

Masonry — renders surfaces water repellent.

Ceramics — increases green strength and green storage life.

Description

PR6772 is a 30% sodium methyl siliconate solution in water.

Application

PR6772 is diluted 10:1 with water then sprayed or brushed onto surfaces. The solution should be air-dried 24 to 36 hours prior to immersion in water.

Caution

Avoid skin contact, PR6772 is alkaline.

Joining of Nanomaterials

-
-

By

Michael Powers

Introduction

- Bulk Joining Processes
 - Welding
 - Brazing/Soldering
 - Adhesive Bonding
 - Mechanical Fastening

Introduction (Cont.)

- Nano-scaled Joining
 - Atomic Force Microscopy

Welding

- One of the oldest joining process
- Half the GNP of industrialized nations rely on welding
 - Alaskan Pipeline
 - Oil Tankers
 - Oil Refinery
-

Alaskan Pipeline

Welding

- Bonding occurs through the formation of chemical bonds
 - Typically the same type as in the parent material
 - Primary Bonds
 - Metallic, Covalent, Ionic or Mixed (Ionic-Covalent)
 - Secondary
 - van der Waals forces
 - molecular entangling (mechanical)

Welding

- Common Processes
 - Arc welding
 - Gas-Tungsten Arc Welding (GTAW)

- Better known as TIG welding
 - Gas-Metal Arc Welding (GMAW)
 - Better known as MIG welding
- Are all high temperature processes
- Require conductive sample

GTAW (TIG)

Fig. 2 Gas Tungsten Arc Welding (6)

GMAW (MIG)

Fig. 3 Gas Metal Arc Welding (6)

Welding

- What about diffusion?
 - Increasing temperature leads to increased diffusion rate
 - $D = D_0 e^{(-Q/RT)}$
 - Nano! now that's small
- How will this affect joint properties?

Welding

- There is hope for this time honored process
 - Polymers
 - Low melting point
 - Natural and forced convection currents in melt
 - Will help distribute nanoparticles
 - Welding of polymers?
 - Any process that causes materials to join through the interactions of atomic or intermolecular forces

Welding

- Viable pressure welding processes
 - Cold welding
 - Roll welding
 - Forge welding
 - Ultrasonic welding
 - Explosive Welding

Explosive Welding

Fig. 4 Explosive Welding

Brazing/Soldering

- Is really a subdivision of welding

- Bonding is accomplished without melting the base metal
- Typically filler is metal but can be ceramic
- Performed at low to intermediate temperatures
- Typically used for repair work

Brazing/Soldering

- Bonding
 - Typically metallic or covalent
 - Depends highly on
 - interdiffusion between filler and base
 - capillary effect
 - surface wetting

Brazing/Soldering

- Brazing
 - Performed with filler material liquidus above 450 C
- Soldering
 - Performed with filler material liquidus below 450 C
- Problem
 - Brazed/soldered joint is typically not as strong as the base material

Brazing/Soldering

- What about a nanocomposite filler material?
- Could nano-solders/brazes be employed in the the electronics industry?
 - Signal attenuation or alteration?
 - Special purpose resistors?
 - High mechanical strength wire repair?

Brazing/Soldering

- What about structural repairs?
 - Nano-brazes/solders would allow far more flexibility than conventional brazes/solders
 - i.e. Customize the joint to fit the particular need
 - Higher strength joints than current techniques allow

Adhesive Bonding

Fig. 5 Adhesive Bonding (6)

Adhesive Bonding

- Bonding
 - Mechanical interlock

- van der Waals
 - Some chemical bonding
- Depends highly on
 - Capillary effect
 - Surface wetting

Adhesive Bonding

- Uniformly distributes stress over joint
 - i.e. no stress concentrators
- allows high structural load capability
- permits the use of lighter weight materials
- Does not alter microstructure of base material

Adhesive Bonding

- Can be tailored to application
 - Flexible
 - allow for thermal expansion
 - mechanical damping

Adhesive Bonding

- Nanomaterials could be mixed with adhesive
 - More design flexibility
 - Higher strength joints
 - Custom tune damping frequency

Mechanical Fastening

- Benefits
 - Provides damage tolerance
 - Does not alter chemical makeup of base material
 - Does not alter microstructure
 - Allows disassembly

Mechanical Fastening

- Disadvantages
 - Creates stress concentrations
 - Can loosen with time
 - Can be heavier than some of the previous techniques

Mechanical Fastening

- Types of joint loading
 - Shear-loaded joints
 - Velcro
 - Tension-loaded joints

Atomic Force Microscopy

- Advantages
 - Can repair nano-sized components
- Disadvantages
 - Can only repair nano-sized components
 - Very time consuming

Atomic Force Microscopy

- Employed by increasing potential and scanning along part length
- Resistance decreases with each pass
- Metal nano-conductor is essentially “pushed” across the gap

Conclusion

- Welding will have limited use primarily with polymers
- Brazing/ Soldering could benefit greatly through the use of nano-brazes/solders
- Similarly adhesive bonding can and will benefit greatly through the use of non reinforced adhesives

Conclusion (Cont..)

- Mechanical fastening nanocomposites benefit from a Velcro type effect.
- Many new and exciting methods like using nanowriters or atomic force microscopy will be discovered.

Definitions:

Extruded Tubes: Tubes for this project will either be a standard polypropylene tube or a co-extruded type made solely by Dupont. The co-extruded tubes are made out of nylon and a vapor barrier to keep the nylon from absorbing water

Tube Mat: The tubes are woven back and forth and using a fine filament thread are woven into a mat. The mat maintains the spacing and position of the tubes until they are potted into a manifold.

Wheeled Spinning: A number of heat exchanger housing to be filled with tubes are mounted onto a large wheel radially on the outer edge of the wheel. A tube is attached to the wheel on one of the units. Then the wheel is made to spin winding the tubing onto the wheel and loading up the empty heat exchanger housings. The units are cut free from the wheel and potted.

Tubes Sonic welded on Rack: To position and space tubing before potting, tubes are woven back and forth on an injection-molded rack and sonic welded in place. The racks are folded up into a bank of tubes and potted into a housing.

Tube Bundles: The tubing mat is rolled up into a bundle of the appropriate number of tubes for building a heat exchanger. To make a rectangular shaped bundle the tube mat can be wound onto a flat rectangular piece of plastic.

Welded on Cover: If the tubes are wound on using the winding wheel fashion, the pressure housing must be completed by welding on the other half of the housing. This makes a complete housing containing the tubes. Potting must follow this step to make a finished heat exchanger.

Box Linear Style: The heat exchanger tubes are all run parallel to each other from the inlet to the out-let manifold.

U-Tube Immersion: The heat exchanger tubes run from the in-let manifold out make a 180 degree bend and come back to the out-let manifold. There isn't a housing used in this style of heat exchanger, it is just placed in a tank.

U-Tube and Shell: This heat exchanger is just like the U-Tube except it has a surrounding shell that is a pressure vessel that is not immersed in a tank.

Flower U-Tube: Multiple U-Tube circuits are used in a flower pattern around a central hub pipe that is the in-let and the out-let manifold. Tubes could be hot air welded to central hub.

Potting: A two part self-curing polymer is used to bond all the heat exchanger tubes together and to bond them to the housing wall as well. In effect when all is done the polymer has become the tube sheet. This is a particularly useful technique when the tube diameter becomes small.

Sonic Welding: Frequencies in the 20,000 Hertz range are used to join two pieces of plastic together. The motion caused by the welder melts the plastic and causes the parts to join on a molecular level.

Heat Stake: A heated aluminum platen, usually Teflon coated, is pressed onto two plastic parts to cause them to weld together.

Hybrid Potting: The tubes are loaded up into a tube sheet but not welded to the tube sheet. A two part potting compound is used to make the joint between the tubes and the tube sheet.

Blow Molded Sheet: A blow molding process is used to make a bank of tubes and have them joined up to a manifold all in one piece. The process would only allow one bank of tubes to be made at a time. These banks could be joined up to have several tube banks deep in the exchanger.

Spiral Form: To increase surface area and turbulence a tube ribbon would be wound in a spiral fashion from the in-let to the out-let manifold

Ribbon Tube: Several tubes are simultaneously extruded that have separate water channels but are joined at the outer diameter like computer ribbon cable to make a flat array.

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-

AMT's
History &
People



Our
Process

Tolerance
& Specs

Please click on those topics in which you are interested –
or simply scroll down

Alloy Data

Request
Info

• Cost Factors

• Parallelism

• Variables

• Roundness

Directions
to our Site

• Standard Linear Tolerances

• Out of Roundness

Contact Us

• Flatness

• Surface Texture

• Straightness

Links

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Cost Factors

The cost of any part increases in direct proportion to the preciseness of its dimensional tolerance requirements. This is true of castings, as well as fabricated and machined parts. Investment castings are designed to minimize the cost of producing close tolerance parts.

Maintaining close dimensional tolerance in an investment casting is affected by many factors. Most of these factors can be controlled by the foundry, although minor "lot to lot" variations will occur. The tolerance bands provided for investment castings are determined by these uncontrollable factors.

While careful machining can achieve closer tolerances than available in an investment casting, a critical design review will often permit minor expansion of tolerances, undercuts, blind holes, etc. to allow the higher production yields and lower piece costs possible with investment castings. If closer than cast tolerances are necessary, the machining required on an investment casting will still be substantially less than on conventional cast or fabricated pieces.

Factors affecting close dimensional tolerances in an investment casting include the following:

Variables

Casting size and shape determines the tolerance required to allow for process variables. These allowances will vary by foundry, depending on foundry experience or specialty.

Many process factors affect investment casting tolerances, including:

1. wax or plastic temperature
2. die temperature
3. pressure of injection
4. firing temperature
5. shell composition
6. rate of cooling.

Standard Linear Tolerances

As a general rule . . . normal linear tolerance on an investment casting can be $\pm .010$ " for up to 1", and $\pm .005$ " for each additional inch thereafter.

Normal tolerances can be expected for production repeatability of all casting dimensions.

Premium tolerances require additional operations at extra cost and achieve closer tolerances on selected dimensions only, even tighter tolerance than those on the following chart can be obtained. The tolerance achieved will depend on the alloy and configuration, and should be determined during consultation with your investment casting supplier

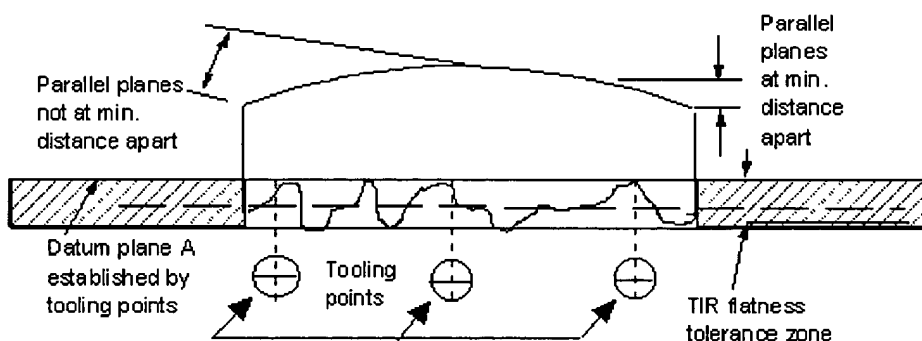
LINEAR TOLERANCE		
DIMENSION	NORMAL	PREMIUM
up to 1/2"	$\pm .007$ "	$\pm .003$ "
up to 1"	$\pm .010$ "	$\pm .005$ "
up to 2"	$\pm .015$ "	$\pm .008$ "

up to 3"	$\pm .020"$	$\pm .010"$
up to 4"	$\pm .025"$	$\pm .012"$
up to 5"	$\pm .030"$	$\pm .014"$
up to 6"	$\pm .035"$	$\pm .015"$
Maximum Variation is $\pm .060"$		

Flatness

Flatness and straightness are so closely related that confusion may arise unless the foundry and purchaser clarify the definitions before production.

Mil-Std-8 specifies "a flatness tolerance is the total deviation permitted from a plane and consists of the distance between two parallel planes between which the entire surface so tolerated must lie." In measuring, the parallel planes must be the minimum distance apart.



Degree of flatness in an investment casting is almost always determined by the volumetric shrinkage of wax and metal during cooling. Usually in the center of the mass, this shrinkage is called "dish" (shrinkage, dip, or "out of flat"). Dish can be controlled by specialized techniques, but it will always occur to some extent. General flatness tolerances cannot be quoted because they vary with configuration and alloy used. The following is a rough guide for areas under 6 square inches.

SECTION POSSIBLE DISH PER THICKNESS FACE OF CASTING

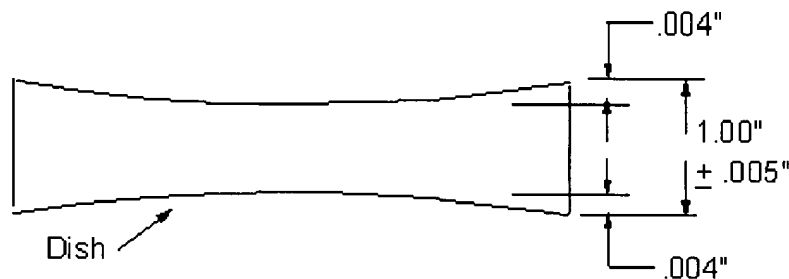
up to 3" not significant

3" to 1" .002" to .004"

1" to 1/2" .004" to .006"

over 1/2" .006" to .008"

Allowable dishing is in addition to the basic tolerance. Thus on a block $1" \pm .005"$ thick, the following would apply:



The method of measuring flatness should be specified by the purchaser.

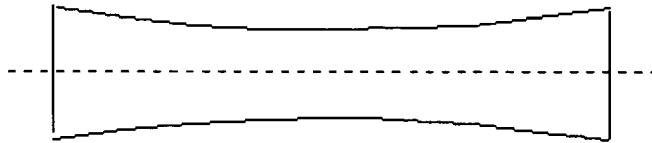
It may vary from a simple surface plate and feeler gage for normal tolerances to full layout with equalization and dial indicators for premium tolerances.

Straightness

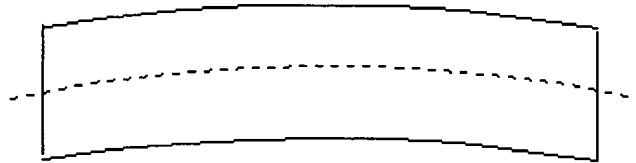
Mil-Std-8 specifies "a tolerance covering the straightness of an axis is the diameter or width within which the axis must lie."

Thus, to correctly measure axial straightness of a shaft, bar, or plate, the tolerance zone within which the axis or axial plane lies must also be measured.

A rectangular bar may be out of flat on the top or bottom but if its axial plane is straight, then the bar must be straight.



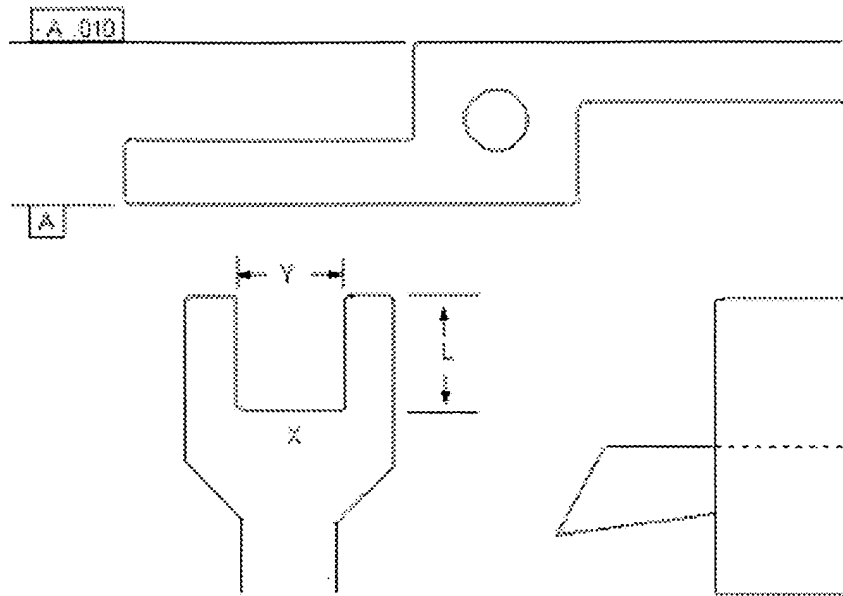
On the other hand, if one side were concave and the opposite side convex, then it would be out of straight.



Straightness may be a real problem with certain types of castings. A relatively thin, short part may bend while a long, heavy part may not. Experience tells the foundry a given design may bend, but experience cannot indicate to what extent. As a rough guide, a constant section will usually have an axial bow of .005" per inch. Ribs and gussets will inhibit warpage, but also hinder mechanical straightening of whatever warpage occurs.

Parallelism

Casting parts with parallel prongs supported at only one end, and yoke castings, are very specialized problems which should be discussed fully with the foundry before production.



Since Point X is the thickest section, it is the ideal gate point. It is also where the greatest volumetric shrinkage will occur.

Dimension Y, however, will be restrained by the rigid mass of refractory. Parallelism is therefore difficult to maintain. It will be .010" per 1" of L, but can be improved by control techniques and sizing.

This condition will also affect any through holes usually found in yokes. When specified, such holes should carry considerable finish stock if they are to be finished truly concentric or line reamed.

Roundness

"Out of round" is defined as the radial difference between a true circle and a given circumference. It is the total indicator reading when the part is rotated 360°, half the difference between the maximum and minimum condition. The latter is usually preferred because it is quicker to determine. The actual inspection method, however, should be specified by the purchaser.

Out of Roundness

TIR or ½ Difference

Diameter Between Diameters

½" .010"

1" .015"

1½" .020"

2" .025"

On larger diameters, linear tolerances
apply.

Surface Texture

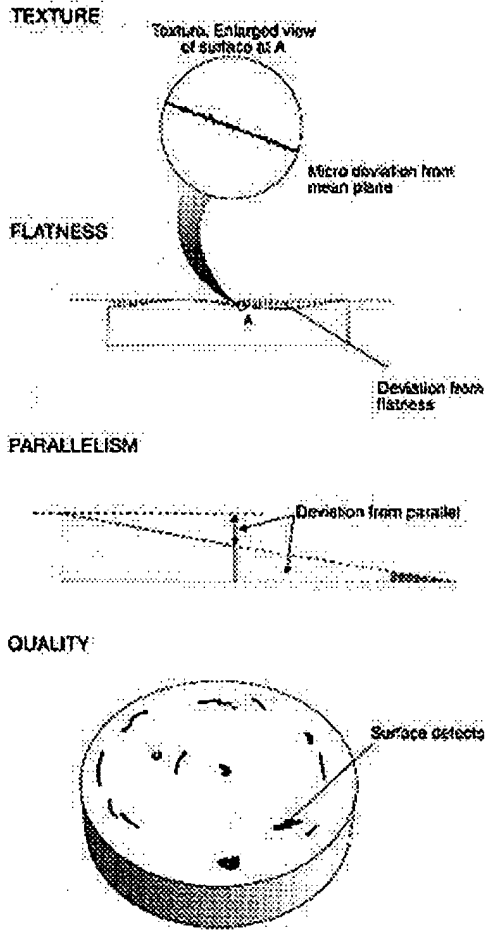
"Surface texture includes roughness, waviness, lay and flaws," as defined in ASA B 46.1.1962.

Typical investment casting RMS is 125 max. Some of AMT's castings have been measured at between 50 – 60 RMS.

This section is taken from THE INVESTMENT CASTING HANDBOOK, c. 1968, by The Investment Casting Institute. Used with permission.

Technical Note: Evaluating Polished Surfaces

Introduction



For the professional involved in the production of optical surfaces, both new and traditional methods are used to assess the quality of output from flat lapping systems such as the MULTIPOL machines supplied by ULTRA TEC Mfg., Inc. This note defines four parameters, which are used to evaluate polished surfaces, and describes how they are measured. The four parameters, as illustrated in fig 1, are:

- Texture
- Flatness
- Parallelism
- Surface Finish

A lapped (gray) surface will have a mean roughness in the region of 0.1 to 0.01 microns (100 to 10 nanometers); a polished surface will have a mean roughness of below 1nm.

Fig. 1

Flatness is the deviation of the surface from the best fitting plane i.e. the macro surface topography. It can be defined as an absolute total value; for example - a 50mm diameter disc is required to be flat to 0.003mm (i.e. 3 microns). However it is more frequently specified as deviation per unit length; i.e. the disc above would be specified to be flat to 0.0006mm per cm. Flatness can also be defined in terms of wavelengths of light (see measurement of flatness).

Parallelism defines the angle between two surfaces of a sample. It can be specified as a thickness difference per unit length or as an angular deviation e.g. a thickness difference of 1 micron per cm is equivalent to 20 seconds of arc, or 100 micron radians angle.

Surface finish is the measure of residual defects in the surface i.e. scratches, digs or pits etc. after polishing is complete. The specification for quality depends upon the final use of the surface but the defects can be defined as total number or number per unit area. It is also usual to put limits on the length, width and depth of any defects. Examples are the SEMI specifications for semiconductor wafers and MIL specifications for optical components.

Measuring Surfaces: Techniques

Flatness:

Large variations of several microns can be measured using conventional electro-mechanical gauges,

preferably of the non-contact type for polished surfaces. The ULTRA TEC Precision Gauge Micromount UMI245 holds a gauge of this type and can be used to measure samples mounted on a precision jig. (Fig. 2)

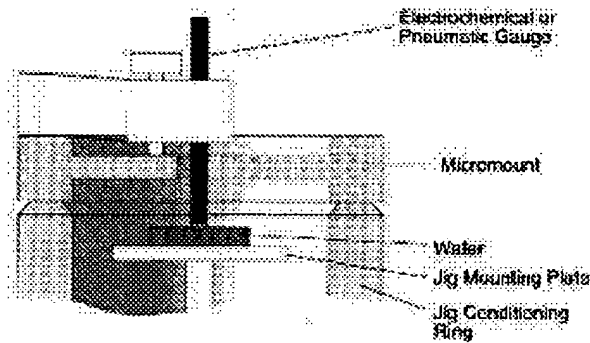


Fig. 2

Small variations of less than one or two microns are measured using interference fringes produced between the surface and an optical flat illuminated by monochromatic light. (Monochromatic light is used because the fringes then have more contrast and are more sharply defined). Like Newton's rings, the fringes may be regarded as contours of equal distance from the surface of the flat; the separation between each fringe of the same color represents a height difference of half a wavelength of the light used (Fig. 3). The optical flat method has the disadvantage that the surfaces of the flat and specimen must be in close contact leading to scratching of both. The ULTRA TEC Fizeau Interferometer UMI 5000 shows the fringes using a non-contact method, where the sample is separated by several mm from the optical reference flat. The fringes are produced by a telescope/eye safe laser system and are viewed through the telescope eyepiece.

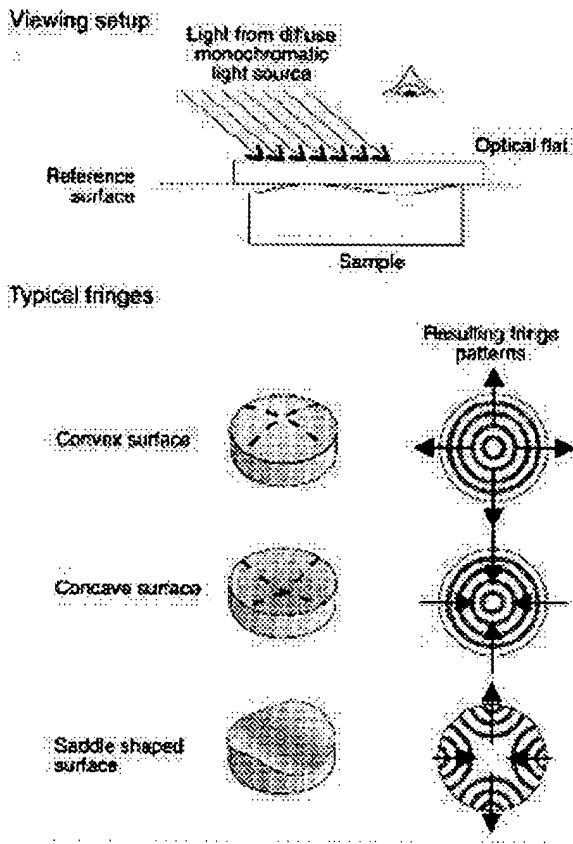


Fig. 3

They can also be photographed or displayed on a CCTV system. Samples can be measured whilst they remain in position on a precision polishing jig.

The fringes follow the direction of the arrows when the optical flat is pressed in closer contact with the surface of the sample.

Parallelism:

For large deviations from parallel, surfaces can be measured mechanically i.e. 10 microns per cm is equivalent to 1 milliradian or approximately 3.5 minutes of arc. The sample is supported on a three-ball plane with the measuring device above one ball. Rotation of the sample about the axis at right angles to the three-ball plane allows differences in height to be measured. The sample surfaces must, of course, be flat to a finer limit than the out-of-parallelism (fig. 4).

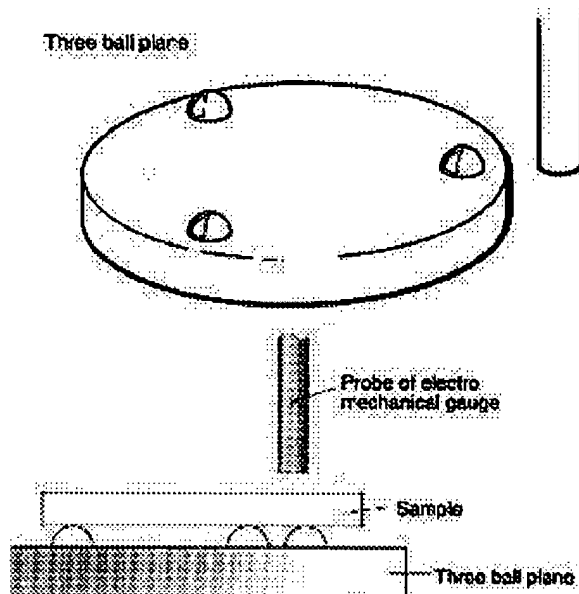


Fig. 4

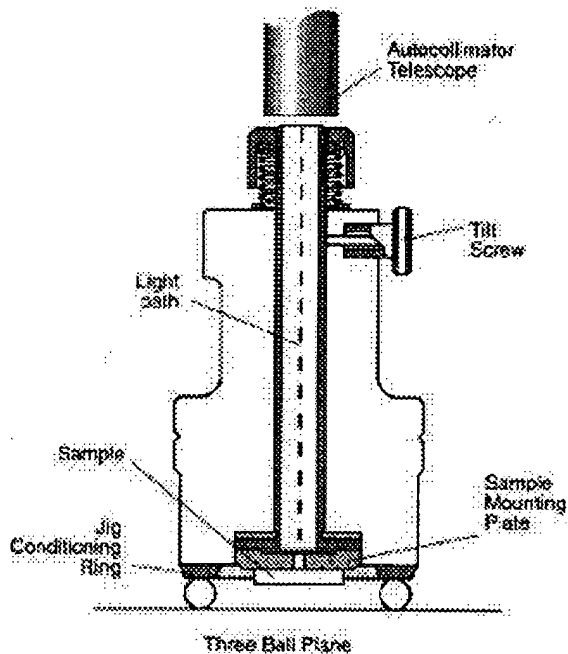


Fig. 5

Smaller values can be measured using the ULTRA TEC Autocollimator (UMI183), which allows differences as small as a few seconds of arc to be measured on polished surfaces. The Autocollimator consists of a reflecting telescope with a calibrated cross wire eyepiece. Using an accurately parallel reference disc, a three-ball plane under the telescope is set precisely at right angles to the optical axis. The reference disc is then replaced by the sample. If surfaces of the sample are not parallel, the reflected cross wire image from its upper surface will be displaced when viewed in the eyepiece. Samples can be assessed in position on the precision polishing jig (Fig. 5) and the out-of-flatness corrected using the micrometer tilt screws on the precision jig.

Texture and surface finish:

A qualitative assessment can be made using grazing incidence light from a point or strip source and examining the surface using a magnifying eyepiece (fig 6). With experience, very small defects can be recognized.

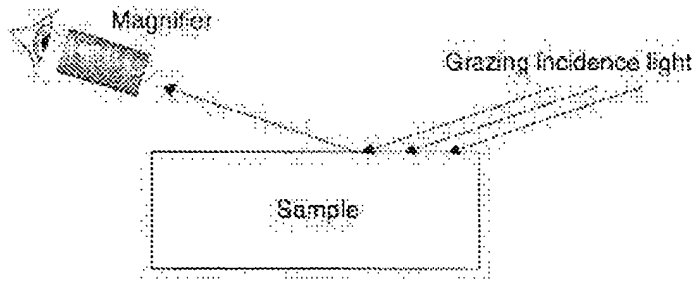


Fig. 6

Texture can be measured quantitatively using a contact surface profile instrument, although polished surfaces tend to be below the sensitivity of many machines. The instrument measures the vertical movement of a fine stylus (of contact or non-contact type) as it is drawn for a short distance over the surface, which is of course scratched. Parameters such as mean displacement etc. are calculated and displayed.

Surface quality can be observed using incident light microscopy. Fitting a Nomarski differential interference contrast attachment can enhance surface relief. Manual measurements of defects larger than the resolution of the microscope system can be measured using a graticule or a measuring eyepiece.

Non-contact image analysis instruments, which use a variety of techniques such as laser triangulation, Nomarski interference etc., are also available. These can give three-dimensional plots of the surface and can calculate mean texture, number and size of defects etc. and are useful for controlling large through puts of high quality.

Further Reading

1. Cutting and polishing optical and electronic materials, by G.W. Fynn and W.J. Powell, Published by Adam Hilger Ltd. (2nd ed.)
2. ULTRA TEC Application Note. Back-Lapping Semiconductor Wafers

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